



ANALYSIS OF ZAMBIA RAILWAY SECTOR – STRUCTURAL DEFICIENCIES & THE WAY FORWARD

PREPARED BY:

RESEARCH:

Albert Kasoma (Senior Researcher) with the support of Bernadette Deka Zulu (Executive Director)

TECHNICAL REVIEW:

Chileshe Chaunga (Senior Researcher)

EDITORIAL TEAM:

Brian Sambo Mwila (Communication Specialist) **Layout and Design**

Melody M. Simukali (Head Communications and Grants) **Editorial**

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ABBREVIATIONS AND ACRONYMS

7NDP	Seventh National Development Plan
AFDB	Africa Development Bank
BR	British Rail
BSAC	British South Africa Company
DRC	Democratic Republic of Congo
IDC	Industrial Development Corporation
NWR	North Western Rail
O&M	Operations and Management
PMRC	Policy Monitoring and Research Centre
PPP	Public Private Partnership
PRC	People's Republic of China
RSZ	Railway Systems of Zambia
SADC	Southern African Development Community
SI	Statutory Instrument
TAZARA	Tanzania-Zambia Railway
USA	United States Of America
USD	United States Dollar
ZIMCO	Zambia Industrial and Mining Corporation
ZRL	Zambia Railways Limited



ANALYSIS OF ZAMBIA RAILWAY SECTOR – STRUCTURAL DEFICIENCIES & THE WAY FORWARD

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INTRODUCTION

The railway system in Zambia **comprises of an extensive network of surface transport with the potential to offer safe, efficient, and environmentally friendly transport across the country and the Southern African Development Community (SADC) region**, connecting all major centers of economic activity and facilitating growth.

However, the railway systems network in Zambia has been operating at a sub optimal level compared to its capacity. Firstly, there is lack

of integration among railway companies within the region who have opted to operate as autonomous entities. Secondly, **the railway traffic dwindled to current levels following the deregulation of road transport in the region, due to high fixed costs, low investments in rail track infrastructure, working capital and rolling stock.**

Zambia like many other sub Saharan African countries has made efforts to increase the volume of rail transport traffic but has not been

successful due to the poor conditions of the rail track infrastructure and low investments in assets and working capital. Despite the many challenges faced by the rail sector in Zambia, **the Government is committed in revamping the sector as outlined in the Seventh National Development Plan (7NDP) and Vision 2030**, (the two policy documents that prioritize the construction of new rail spurs and rehabilitation of existing lines **to increase operational efficiency, reduce the cost of freight, and increase the tonnage being carried.**) Further, the **Government has pledged to promote private investments to construct other rail spurs, including intracity transit systems. Plans to migrate the rail gauge from the existing Cape gauge to Standard gauge are in place to enable higher speeds and higher tonnage of freight.**

At the regional level, SADC region remains committed to fostering a functional and integrated rail network throughout Southern Africa because of the railways' fuel efficiency and potentially cost-efficient implementation. This is **outlined in the Protocol on Transport, Communication and Meteorology enforced in 1996 to which Zambia is a signatory.** In agreeing to the Protocol, Member States are required to facilitate an efficient and reliable railway service that helps to integrate the region¹. To do so, **Member States are required to collaborate on harmonized policies for railway use and implementation that economically restructures the railways by increasing the role of the private sector.** The harmonized policies should aim for common standards and procedures, particularly in terms of infrastructure. The **SADC Protocol on Transport, Communication and Meteorology** also advocates for Member States to establish Multilateral Railways Route Management Groups that facilitate and oversee railway networks in the region².

1. Southern African Development Community (SADC), 'Southern African Development Community; Railways', 2018 <<https://www.sadc.int/themes/infrastructure/transport/railways/>>.
2. Southern African Development Community (SADC).

BRIEF HISTORY OF RAIL TRANSPORT IN ZAMBIA

Zambian Railways Limited

Zambia Railways Limited is wholly owned by the Zambian Government, managing a **rail track covering almost 1,000 km**. What is now Zambia Railways Limited was formerly the North-Western Region of Rhodesia Railways with its regional headquarters in Kabwe while the company's headquarters was in Bulawayo. The construction of this line which was spearheaded by the British South African Company (BSAC) started at the Victoria Falls Bridge in 1903 and was finally connected to Zaire (Now Congo DR) in 1909³.



ZRL OWNED BY THE ZAMBIAN GOVERNMENT



BRITISH SOUTH AFRICAN COMPANY (BSAC) STARTED THE CONSTRUCTION ON THE RAIL AT THE VICTORIA FALLS BRIDGES IN 1903

The line operated as Rhodesia Railways with joint ownership with Southern Rhodesia until after the dissolution of the Federation of Rhodesia and Nyasaland in 1963 when Rhodesia Railways became and operated as the Unitary Railway System with assets remaining jointly owned by Zambia and Southern Rhodesia (Now, Zimbabwe) until 1967. In 1967, the Zambian Government passed the Zambia Railways Act 1967, which gave birth to the Zambia Railways Board⁴. In 1978, the Government decided to transfer Zambia Railways to Zambia Industrial and Mining Corporation (ZIMCO) with effect from January 1979. This transfer necessitated the incorporation of the new company, limited by shares and the dissolution of the Zambia Railways Board.

3. Zambia Railways Limited, 'Strategic Business Plan', 2014.
4. Zambia Railways Limited.

In 1982, the Railways Act vested all assets and liabilities of the Zambia Railways Board into Zambia Railways Limited, a company incorporated under the Companies Act of Zambia. The transfer was effected in April 1984. In December 2003, the Government privatized Zambia Railways Limited through a concession agreement signed with a private company called “Railway Systems of Zambia” (RSZ). This was done after signing of the Freight Concession Agreement where RSZ was given rights to operate both freight and passenger trains through a 20-year concession from Copperbelt mining region near the DR Congo border to the Zimbabwean border at Victoria Falls⁵.



After nine (9) years of being operational, on 10th September 2012, Government cancelled the concession agreement signed with RSZ and repossessed operational rights from the private entity and hence the re-birth of Zambia Railways Limited. Government had claimed that RSZ had blatantly disregarded the provisions of the agreement, and had been acting in a manner prejudicial to the interests of Zambians. **RSZ had failed to invest in the maintenance and renewal of both infrastructure and rolling stock leading to deterioration of the state-owned assets, unacceptable level of derailments and poor safety, including loss of life and property⁶.**

5. Joy Sata, 'A Look at Zambia's Rail Transport.', Zambia Daily Mail (Lusaka, January 2007).
 6. Fred Mwila, 'A Comparative Study of Access to Railways in Zambia' (University of Zambia, 2016).

PERFORMANCE OF ZAMBIA RAILWAYS LIMITED

Figure 1 shows that from the time of concession, the performance in the tonnage moved on rail declined drastically from **1,323,191mt in 2004 to 690,793 metric tonnes in 2009⁷**. This was highly due to lack of investments in the track rehabilitation and infrastructure upgrade by the concessionaire, resulting in the drop-in performance.

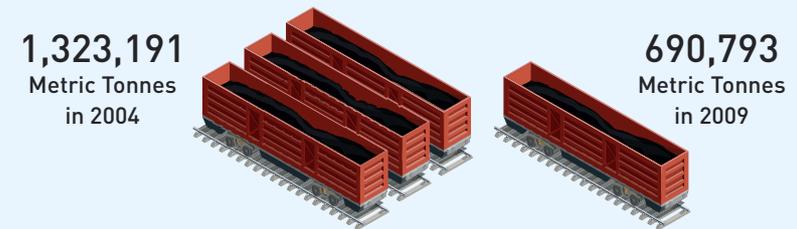
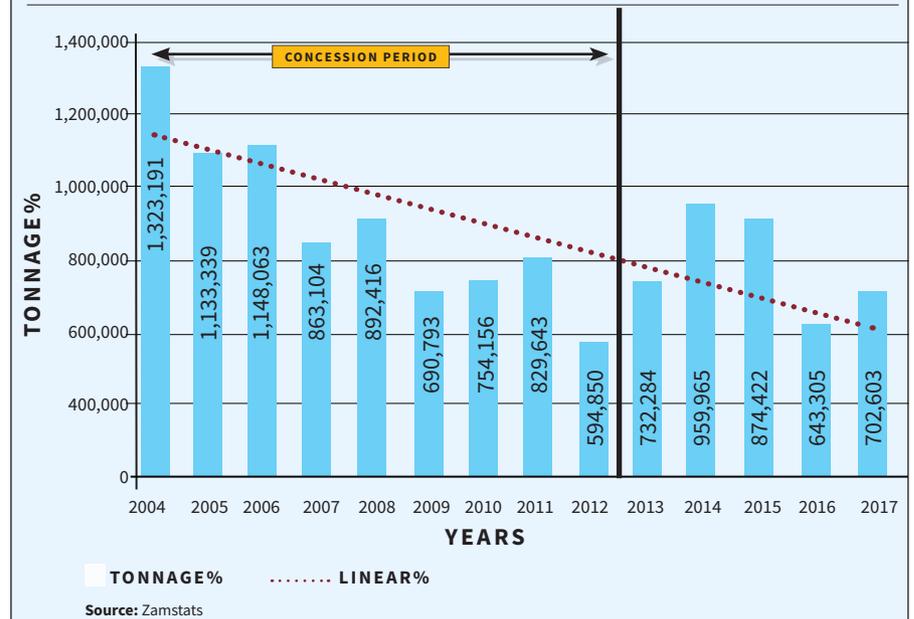


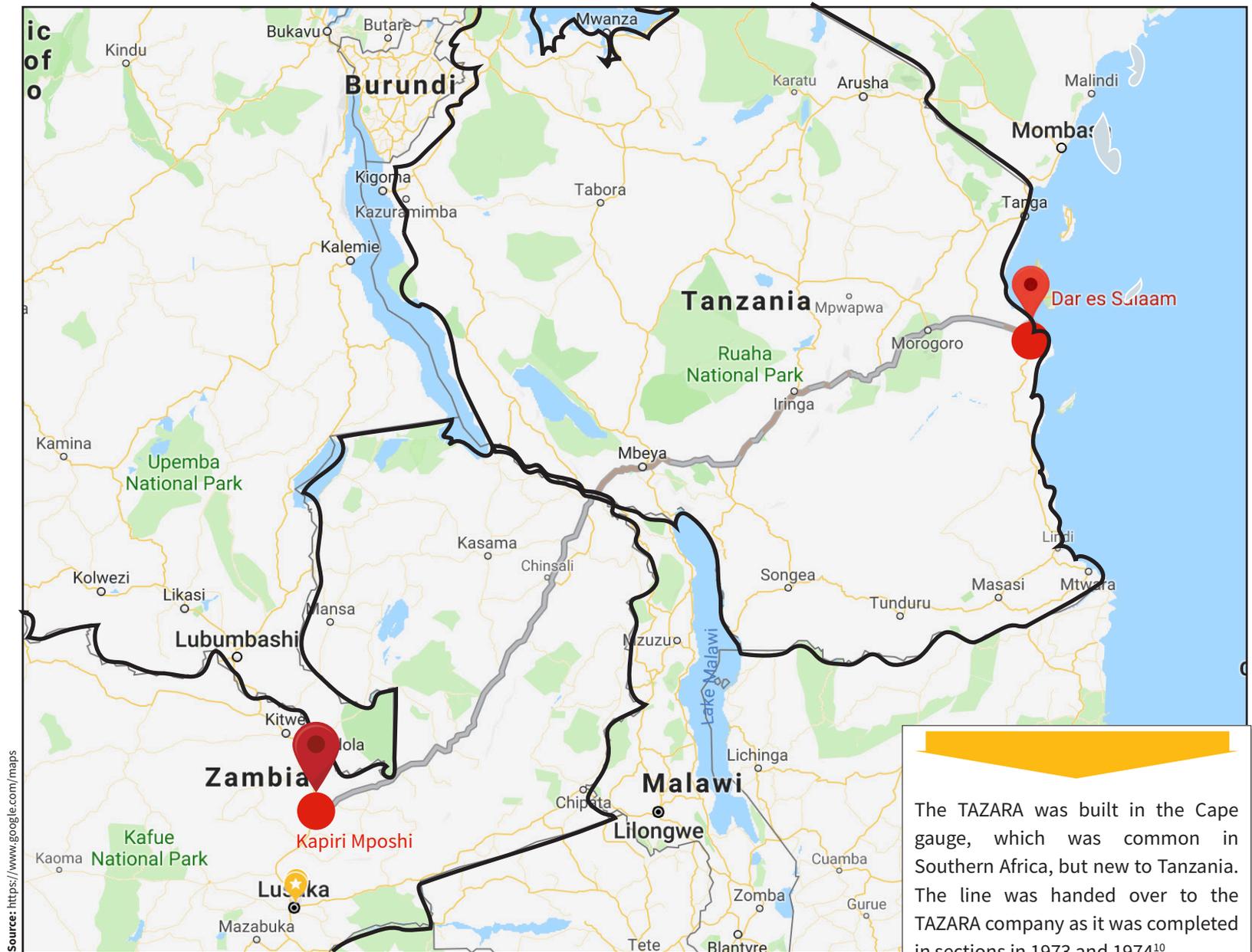
Figure 1: Performance of Zambia Railways Ltd from 2004 to 2017



7. Southern African Development Community (SADC)

TAZARA RAILWAY

Tanzania/Zambia Railway Authority (TAZARA) which is co-owned by Governments of Zambia and Tanzania is another key railway. It covers approximately **1,900 km from Kapiri-Mposhi Zambia to Dar-es-salam in Tanzania**⁸. From 1964, discussions took place about a proposed railway line between Tanzania and Zambia. As Great Britain had not shown any interest in the proposal, the People's Republic of China (PRC) came to the rescue and provided financial and technical assistance. The PRC Government sponsored construction of the railway specifically to eliminate Zambia's economic dependence on Rhodesia and South Africa. The contractual foundations were closed in 1967, and one year later, the Tanzania-Zambia Railway (TAZARA) was established, as a condominium railway owned by Tanzania and Zambia⁹.



Source: <https://www.google.com/maps>

The TAZARA was built in the Cape gauge, which was common in Southern Africa, but new to Tanzania. The line was handed over to the TAZARA company as it was completed in sections in 1973 and 1974¹⁰.

8. Tanzania Zambia Rail Authority (TAZARA), 'Our History', 2019.

9. Tanzania Zambia Rail Authority (TAZARA).

10. Tanzania Zambia Rail Authority (TAZARA).

PERFORMANCE OF TAZARA

The TAZARA has been a major economic conduit in the region. However, it has never been profitable and more recently it has suffered competition from road transport (such as the Trans-Caprivi Highway and Walvis Bay Corridor to Namibia) and the re-orientation of Zambia's economic links towards South Africa after the end of apartheid¹¹. Amidst daunting operational challenges, the Tanzania-Zambia Railway Authority's (TAZARA) annual freight traffic volumes hit a low of 122,473.00 metric tonnes (mt) in 2015. Its wagons were taking more than 100 days to make a return trip from Dar es Salaam in Tanzania to Kapiri-Mposhi in Zambia. The trains on the other hand were taking 30 days to move on the binational railway-linking the Southern African regional transport network to the seaport of Dar es Salaam in East Africa. **Historic challenges to do with liquidity, old infrastructure, inadequate rolling stock, and among others, including stiff competition from the road transport sector have left TAZARA whose vision is to be “the most preferred transport organization in the sub-region”, gasping for survival. TAZARA has been exploring ways to revive the company and ensure to meet its target of transporting 600,000mt of cargo annually¹².**

Figure 2: Performance of Tazara 2009 to 2017



Source: Zamstats

PLANNED RAIL DEVELOPMENT

The Zambia Government has realised the need for transport infrastructure development, particularly road and rail that would open up export opportunities with Angola and the Democratic Republic of Congo and provide alternative routes to the Atlantic Ocean cannot be overemphasized.

The **Chipata-Petauke-Serenje Railway line was recently constructed to complete the link from the port of Nacala to the existing railway lines in Zambia and thereby establishing Chipata as a dry port on the eastern border of the country.**

The **Zambian Government has committed itself to the development of railway sector through proposed construction and development of various railway lines as indicated in the Table 1¹³**

Table 1: Rail Projects earmarked for development

	NAME OF THE RAIL PROJECT	LENGTH (KM)	TARGET ACCESS ROUTE
1	Nseluka/Mpulungu rail project	195	To the Great Lakes Region
2	Livingstone/Kazungula/Sesheke	200	To Walvis Bay in Namibia
3	Solwezi/ Kaoma/ Sesheke	800	To Walvis Bay in Namibia
4	Chingola-Solwezi-Jimbe	600	Lobito Corridor (Angola/DRC)

Source: Ministry of Communications and Transport, 2017

13. Ministry Communication and Transport, Ministerial Statement, Railway Transport System in Zambia, 2017 <http://www.parliament.gov.zm/sites/default/files/images/publication_docs/MINISTERIAL STATEMENT ON THE STATE OF RAILWAY TRANSPORT BY HON MUSHIMBA.pdf>

11. Gaël Raballand and Alan Whitworth, 'Should the Zambian Government Invest in Railways?', 2011

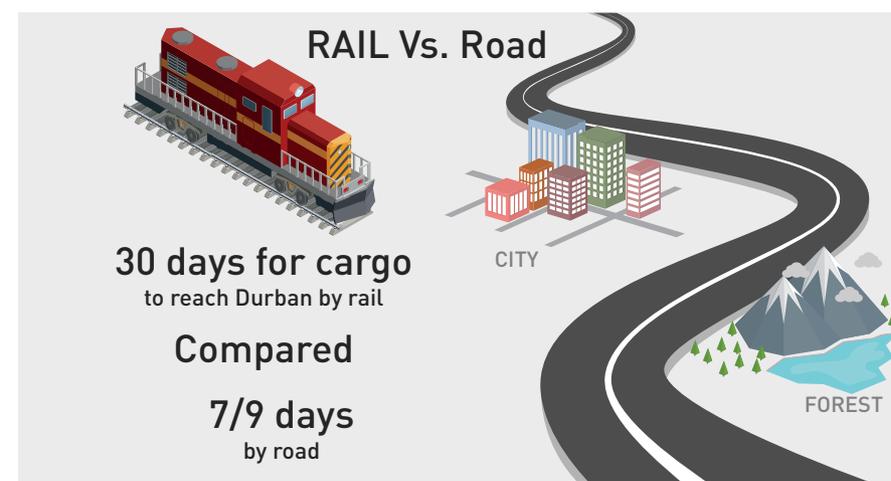
12. Chambo Ng'uni, 'TAZARA's First Step of 1,000 Miles', Zambia Daily Mail (Lusaka, 14 August 2018) <<http://www.daily-mail.co.zm/tazaras-first-step-of-1000-miles/>>.

The construction of the 600 km Chingola-Solwezi-Jimbe rail project to link Zambia to the Lobito Corridor in Angola¹⁴ will be done by the North West Rail (NWR) company **which represents a coming together of the Government of the Republic of Zambia, Zambian shareholders, mining companies, financiers and logistics operators will execute the construction of this rail project**¹⁵. The project entails the construction of railway lines connecting the copper heartland of Zambia to the borders of Angola and the Democratic Republic of Congo (part of the “Lobito Corridor”). **The total project cost is estimated at \$1.2bn.**

Government has pledged to promote private investments to construct rail spurs in intracity transit systems. In December 2018, then Transport and Communications Minister, Honorable Brian Mushimba had revealed that feasibility studies for engineering designs for the construction of the Lusaka Mass Transit Train had been completed¹⁶. After which Government had then moved to the next stage of picking the best financing options. The idea behind this project was to decongest the roads and result in ease flow of traffic and services.

KEY CHALLENGES WITH RAILWAY TRANSPORT IN ZAMBIA

Among the several challenges of the Zambian railway sector which has made it unattractive mode of transport is that the **average speed of locomotives is about 40km per hour which is too slow in modern business and commerce where people and corporates want their goods to move in real time speed**¹⁷. Therefore, it is imperative that **measures be instituted to ensure that trains start travelling up to speeds of 80km/hour and above.** If this was to happen, railway sector may become the preferred mode of transport as the case is in other countries. Slow speed has led to increased transit times averaging for instance, thirty (30) days for cargo to reach Durban compared to 7-9 days by road ¹⁸.



The other challenge relates to the fact that two main players in the Zambian railway sector, **TAZARA and ZRL have insufficient locomotives and wagons.** For instance, by 2014, ZRL had a total locomotive fleet holding of 37, out of which 24 were operational and the balance 13 were defective and extensively cannibalized. The total wagon holding for the Company was 2094 of different types. Only 1342

17. Ministry Communication and Transport.
18. Raballand and Whitworth

14. Kalonde Nyati, 'North-West Rail Work to Commence Soon', Zambia Daily Mail, 2017 <<http://www.daily-mail.co.zm/north-west-rail-work-to-commence-soon/>> [accessed 25 March 2019].
15. North West Rail Zambia (NWR), 'North West Rail Zambia', 2018 <<https://northwestrail.co.za/about-nwr/>> [accessed 25 March 2019].
16. Lusaka Times, 'Zambia -Lusaka Mass Transit Train Coming', Lusaka Times (Lusaka: Lusaka Times, 14 January 2019) <<https://www.lusakatimes.com/2019/01/14/lusaka-mass-transit-train-coming-mushimba/>>.

of 2094 wagons were in active status, leaving a balance of 752 which were defective and needing major repairs¹⁹. However, in May 2018, South African logistics firm, Transnet agreed to lease locomotives and wagons to Zambia Railways to boost its capacity to handle bulk cargo. Transnet had agreed to lease eight locomotives and 600 wagons to the Zambian firm²⁰.

The Zambia Railway Sector also **lacks reliability and has outdated infrastructure characterized by poor maintenance**. Generally, there has been poor conditions of the rail track infrastructure and low investments in assets and working capital. ZRL rolling stock is characterized with over- aged wagons and locomotives (average age is 40 years) which lack air brake system²¹. The 2014 Parliamentary Committee Report²² indicated Zambia Rail network was generally on rotten wooden sleepers and only a few isolated areas were on concrete sleepers. Even the areas which were on concrete sleepers had sections with broken concrete sleepers. The branch lines were generally on wooden sleepers, steel sleepers and concrete sleepers in some scanty areas, whilst the wooden sleepers in all the yard lines were not in good condition.

The lack of reliability of rail transport has been consistently mentioned by firms as the main reason for using road transport. Frequent train delays and cancellations has prompted customers to switch to road haulage, especially for transportation of high-value goods, and timing is important²³.

Rail shipments has also been criticized for lacking proper security. The Zambia Chamber of Mines has not only condemned the rail infrastructure in the country's Copperbelt Province as being in poor state of repair, but also indicated that it lacked capacity and adequate security provision to guarantee safety of shipments²⁴.

19. Zambia Raiways Limited, 'Zambia Raiways Limited and Transnet Sign MoU', Rail News, 2017.
 20. Zambia Raiways Limited.
 21. Zambia Raiways Limited.
 22. Parliament of Zambia, Report by Parliamentary Committee on Communications,Transport, Works and Supply For the Third Session of the Eleventh National Assembly (Lusaka: Parliament of Zambia, 2014).
 23. Duncan Pieterse and others, 'Supporting Export Competitiveness through Port and Rail Network Reforms A Case Study of South Africa.', 2016, 38 <<https://doi.org/10.1596/1813-9450-7532>>.
 24. Rail Link Communications, 'Focus on 67 YEARS of Proven Industry TRACK Record throughout Southern Africa', Railways Africa, 2018

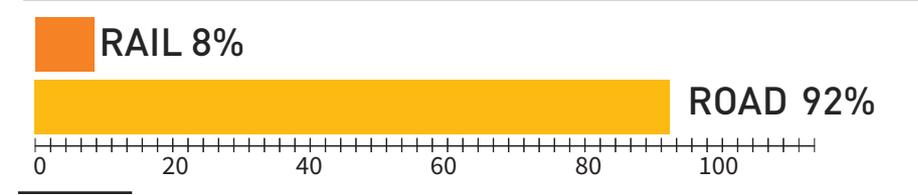
Lack of coordination with regional railway companies is another factor that has contributed to the poor performance of the railway sector. For instance, there is weak coordination between ZRL, TAZARA, Spoornet and other railway companies in the region²⁵. **Therefore, there is need to enhance coordination especially for landlocked countries such as Zambia with its neighboring countries in areas of transport infrastructure improvements.** Coordinating and managing cross-border rail services has been increasingly difficult due the downward spiral effects of most problems faced by regional railways' companies such as frequent locomotive failures leading to long delays at borders. For example, transit time between Ndola in Zambia and Durban in South Africa increased to 30 days, nearly four times longer than road services²⁶.

Despite the challenges mentioned above Africa's rail freight tariffs, which range from US\$0.03 to US\$0.06 per ton-km, are competitive against truck transportation²⁷. However, the market share of rail freight compared to road is low because of the quality of rail services continues deteriorating, mainly because of lack of infrastructure maintenance.

MARKET SHARE

The market share of the railway sector has been going down for many years now. About 6,702,498.40 tonnes of traffic was moved in Zambia in 2015. Out of this only 511,730.00 tonnes was carried on the rail as indicated in Figure 3. Based on this sample of traffic as the available cargo on the market, the rail has only 8.0% of the market share. Is there hope to increase tonnage in the railway sector?

Figure 3: Rail and Road Market Share in 2015



25. Raballand and Whitworth.
 26. Pieterse and others.
 27. Ilimi Atsushi, Humphrey Richard Martin, and Elieskia Mchomvu Yonas, 'Modal Choice between Rail and Road Transportation Evidence from Tanzania', 2017.

GOVERNMENT INTERVENTIONS TO INCREASE RAIL FREIGHT

The Government has instituted some measures that are aimed at boosting traffic in the rail sector. Such measures include among others the following;

- The Government nullification of the concession with the Railway System of Zambia (RSZ) in 2012, which led to an eighteen percent growth in the traffic of the ZRL between 2012 and 2017²⁸.
- In 2012, the Government decided to allocate about USD 120 million into ZRL in order to increase tonnage capacity and enhance the rolling stock. Consequently, tonnage carried was increased to 732,284 tonnes in 2013 and closed around the 959,956 tonnes in 2014 after ZRL allocated USD 81.8 million towards railway infrastructure and USD 38.2 million towards rolling stock in 2012²⁹.
- There have been some recapitalization efforts by Government into ZRL leading to the growth of the operation network by 44 percent after the commencement of operation on the Nacala Corridor and the revival operation in the inter-mine region on the Copperbelt province. In October 2018, The Industrial Development Corporation (IDC) Board had approved an investment of \$850 million into rail infrastructure and rolling stock for Zambia Railways Limited (ZRL). The investment was important because it was a wholesome package which attends to the entire capacity constraints of ZRL³⁰.
- Government brought into effect the Statutory Instrument to compel transporters of heavy cargo to move 30 percent of bulk cargo from road to railway in January 2018³¹. This was done in a bid to

optimize the transport sector and promote the sustainability of rail subsector. The decision to have such an SI in place started after a consultative meeting with the stakeholders which included among others mining houses, manufacturing companies, and transporters of bulky commodities. The implementation of the 30 percent quota system is aimed at preservation of the road infrastructure and guaranteed volumes of cargo and increased revenue and efficiency in the railway operations.

LESSONS FROM OTHER COUNTRIES - RAILWAYS MODELS IN AFRICA

A large range of business models have emerged in the railways sector based on railways history, existing regulatory framework and market specificities (including market size and density). Differences exist between vertically integrated and vertically segregated models, and private and public sectors. The private and public sectors can share responsibilities for infrastructure, investments and operations. All models can prove successful if developed in a suitable environment, underlying that no perfect railway business model exists³².

The selected African countries in Figure 4 on the next page provide a wide range of business models. Figure 5 also illustrates the boundaries of responsibilities of public and private entities in the key components of railway models in Africa:

FIGURE 4 ON THE NEXT PAGE

28. Tryness Tembo, 'State to Create Railways Development Agency - Zambia Daily Mail' (Lusaka, 31 August 2017) <<http://www.daily-mail.co.zm/state-to-create-railways-development-agency/>>.

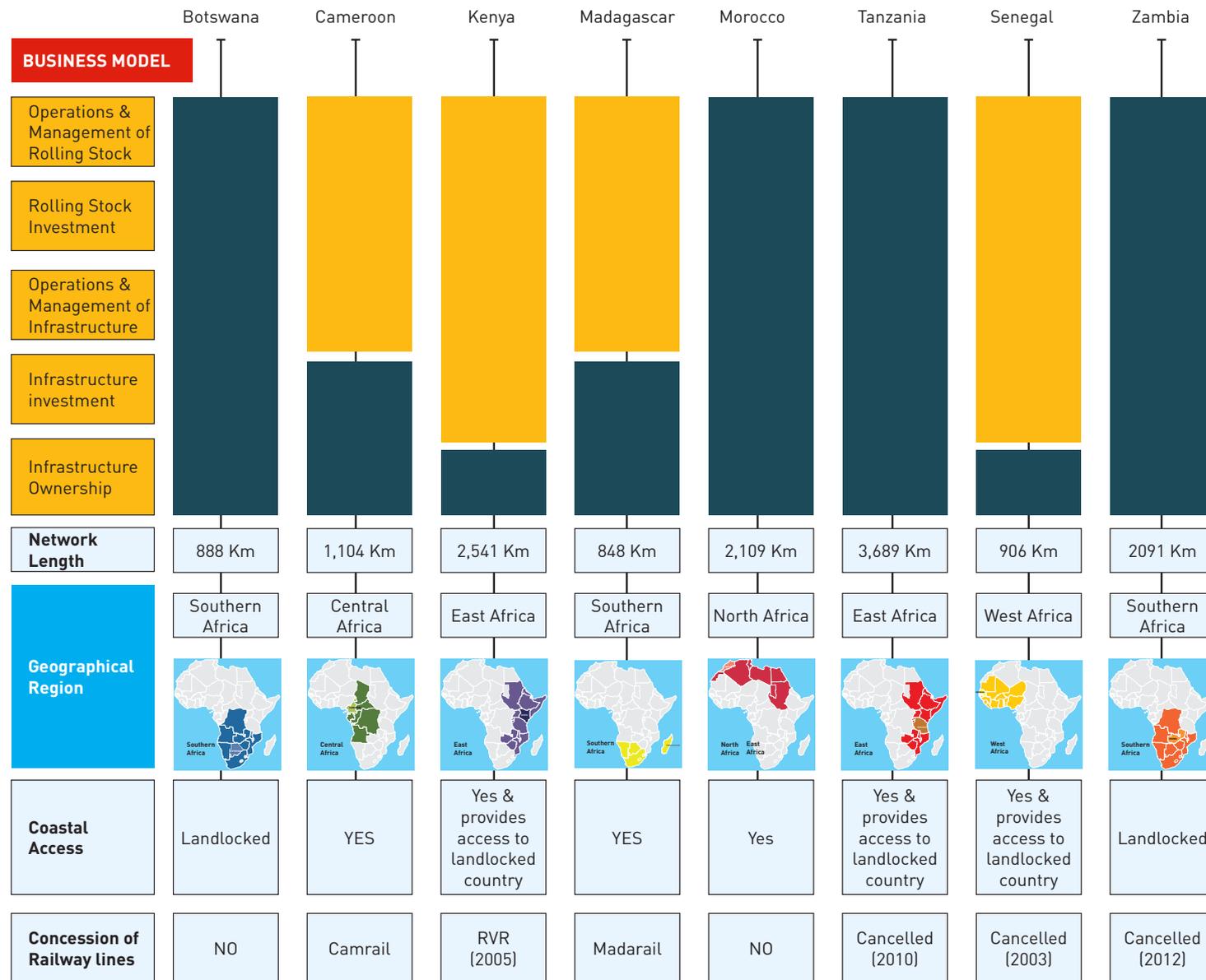
29. Zambia Invest, 'Zambia Railways Limited Net Worth Up By 235%', 2015 <<http://www.zambiainvest.com/transport/zambia-railways-zrl-net-worth-raises-235-percent-to-zmw-63-million-in-three-years>> [accessed 25 March 2019].

30. Chris Phiri, 'IDC Approves \$850 Million Investment in Rail Infrastructure', *Zambian Reports* (Lusaka, 23 October 2018) <<https://zambiareports.com/2018/10/23/idc-approves-850-million-investment-rail-infrastructure/>>.

31. Zambia Railways Limited.

32. African Development Bank, *Rail Infrastructure in Africa* (Abidjan, 2015) <https://www.afdb.org/fileadmin/uploads/afdb/Documents/Events/ATFForum/Rail_Infrastructure_in_Africa_-_Financing_Policy_Options_-_AfDB.pdf>

Figure 4: Railways Business Models in selected African countries



KEY

Public Sector (Dark Blue)

Private Sector (Yellow)

There has been a growing disillusionment with rail concessions in Sub-Saharan Africa. With a couple of exceptions, concessions have failed to perform as anticipated (in countries such as Zambia, Senegal and Tanzania), sometimes because of unrealistic expectations. In other countries it has led to accidents because of poor maintenance. In some instances, it is because of incompetent concessionaires selected through an inadequate concessioning process, and sometimes a combination of both.

The cancellation of concessions is not an African problem alone. In Britain, Railtrack, after suffering total financial collapse in 2001, was taken over by a Government-supported company, Network Rail, in 2003³³. The private company's poor financial performance was aggravated by fatal rail disasters.

Source: Adapted from African Development Bank (2015)

33. r Mescht, 'Rail Privatisation in South Africa: Will It Work?', 24th Southern African Transport Conference, 1.July (2005), 996-1005. (2005), 996-1005.

WAY FORWARD; STRUCTURAL AND MANAGEMENT SYSTEMS TO MAKE THE RAIL SECTOR PROFITABLE

CREATION OF THE RAIL DEVELOPMENT AGENCY

The Government of Zambia did make its intentions known on the **creation of the Railways Development Agency to facilitate the separation of rail infrastructure development and maintenance from railway operations. This is a welcome move and its actualization is long overdue as it will bring about readjustment of cost centers in the railway sector.** Zambia Railways Limited (ZRL) will focus on running its business operations competitively and in sustainable manner without focusing on the costly maintenance and investment in new infrastructure. **The creation of Railways Development Agency should also facilitate the entry of private rail operators³⁴.**

Historically most railways were fully integrated organizations where the railway enterprise provided all freight and passenger services, developed and managed its own infrastructure and performed most of the secondary functions needed by a railway internally.

The modern trend however, is to separate and re-organize the various rail businesses according to function. The so-called 'functional model' is very prominent in Europe where European Union policy requires rail operations to be separate from infrastructure control³⁵.

Separation or 'unbundling'³⁶ of rail transport activities, is a prerequisite for private sector participation in the rail industry as it:

- Liberates the railway from its base of fixed assets and long-term debt, allowing it to function commercially;
- Allows for the establishment of profit and cost centers, which in turn improves financial information and accountability;
- Makes the railway structurally more like its competing modes ;and
- Subdivides the railway enterprise into manageable components, some of which can be privatized or concessioned.

In the United Kingdom, the country's rail network was initially developed and operated by various private companies until nationalization on 1 January 1948 with the formation of British Rail (BR). The BR-era ended on 1 April 1994 when individual elements of the national rail system were broken up into separate organizational and accountable business units³⁷. Train services were distributed amongst 25 operators who leased their rolling stock from individual leasing companies. Rail infrastructure was separated from train operations and came under ownership of a private company called Railtrack. In Senegal the rail concession was canceled in 2003 but the Government had only taken over the rail infrastructure ownership and investment. The rolling stock and operations have been left to the private sector to run.

DECENTRALISATION

Decentralization as another method of breaking up a large unyielding railway organization, especially in the case of localized passenger services which often run at a loss, but which local governments may be willing to subsidize³⁸. The Zambian Government can pursue this option in areas where the transport need is mostly at a local level, decentralization promotes greater accountability and open doors for private sector participation through contract operation.

34. Tembo.

35. van der Mescht.

36. Louis S. Thompson and Alice Galenson, 'Infrastructure Notes-Forms of Private Sector Participation in Railways', Transportation, Water and Urban Development Department of World Bank, 1993, 1-5 <<http://siteresources.worldbank.org/INTTRANSPORT/Resources/336291-1119275973157/td-rw5.pdf>>.

37. van der Mescht.

38. Thompson and Galenson.

PRIVATE PARTICIPATION

Several other forms of private participation in the rail sector are common which can be utilized in Zambia. Generally, these require an existing rail market within which private investors can operate. There are a number of possible forms of such private participation, including **equipment ownership and leasing, infrastructure construction and maintenance, and private operation of trains**³⁹.

1. Service Contracts

Private sector involvement in a publicly owned railway can also be in the form of a **service contract where activities such as catering, building maintenance, etc** are outsourced to the private sector. ZRL can take a leaf from South Africa where this practice is well established where Spoornet the main Railway line company employs subcontractors to deliver a variety of non-core services, ranging from security to mechanized track maintenance⁴⁰. All railways, even state-owned vertically integrated railways, commonly contract with the private sector for a range of services, from purchasing supplies (such as fuel or materials) to contracting for services (such as audit, accounting or overhauling traction motors). Reforms that expand contracting for services and materials can expand private sector participation and stimulate increased private investment⁴¹.

2. Infrastructure construction and maintenance

Historically, many vertically integrated railways have constructed new lines with their own labor force, and many railways use employees to carry out renewals and infrastructure maintenance. However, construction and infrastructure maintenance activities can be contracted out, which can create a market in leasing specialized

and expensive railway-specific maintenance equipment. Even with a single infrastructure entity, a sufficient number of specialized track maintenance contractors can become a sustainable market for equipment leasing, especially if other railways of similar gauge are nearby and also seeking to contract construction and infrastructure maintenance services⁴². Examples of this specialized and highly productive equipment include rail-grinding trains, tunnel boring machines, and high-productivity track tamping machines. **Track renewal work is successfully contracted out in this way in Latin America, the US, Europe, and Australia, where there are multiple railways or railway concessions.**

3. Equipment ownership and leasing

Reforms that permit or encourage private investors to purchase railway equipment and lease it to users can bring substantial investment to the railway sector. In many markets, third-party rolling stock companies own, maintain and lease equipment to railways. This is the case with much of the petroleum tank car fleet in North America. Another example is TTX, a rail wagon pooling company owned by a group of North American railways. GATX, founded in 1898 and now the world's largest railway car leasing company not owned by a railway, owns more than 125,000 wagons and 600 locomotives serving the North American market⁴³. GATX also operates in Europe and in India. In the UK, leasing of rolling stock is common for all of the passenger train operating companies.

Rolling stock leasing bring to the sector the following benefits⁴⁴:

- Provides both railways and shippers flexibility in their management of wagons fleets;
- Reduce the capital requirements of operators who pay for use of over time; and

39. World Bank Group.

40. Thompson and Galenson.

41. World Bank Group, 'Railway Reform: Toolkit for Improving Rail Sector Performance: Encouraging Private Sector Participation' <https://ppiaf.org/ppiaf/sites/ppiaf.org/files/documents/toolkits/railways_toolkit/PDFs/RR Toolkit EN New 2017 12 27 CH13.pdf>.

42. World Bank Group.

43. World Bank Group.

44. World Bank Group.

- Frees up the railway operator's balance sheet, which can facilitate financing of other capital needs.

Privately owned equipment usually has higher utilization, because the owner ensures that the wagon is returned quickly for reloading. Moreover, the equipment may be newer and more reliable.

In the case of leasing the contractor could be charged a fee for the use of fixed assets. Both Amtrak and VIA, the government-supported passenger rail service in Canada, pay to operate their trains over the tracks of other railway companies. Another form of leasing could be where a railway does not own locomotives and/or rolling stock, but leases them from a private entity⁴⁵.

4. Management Contracts

Management contracts range from what is essentially a form of technical assistance, where the contractor carries no financial risk, to more complex cases where compensation is based at least partly on results, which could include performance incentives⁴⁶. The contractor assumes responsibility for operations and maintenance of a particular activity, which could include running an entire railway. Governments frequently seek to solve the problem by outsourcing railway management to a private sector operator. This can be effective, but is fraught with difficulty. One of the greatest challenges has been designing contract incentives that reward attaining the performance the Government wants to achieve, while ensuring that the condition of the physical assets improves⁴⁷.

Amtrak, the Government-subsidized passenger rail service in the United States, provides commuter services in some major cities

under contracts that provide for full cost repayment plus profit⁴⁸. Governments may choose contract management because they cannot or are not able to face the difficult staffing and investment choices associated with greater private sector involvement⁴⁹.

5. Private Operations of Trains

Many Governments' railway reform efforts include trying to increase competition between rail services. Within the European Union, regulations now require infrastructure accounts to be separated from transportation services accounts⁵⁰. **Multiple rail operators are licensed to provide services over the same multinational rail network. Private operators negotiate for network space ('train paths') and provide shippers with loading, unloading, train assembly, and transport services on a 'for-hire' basis.** Private operators invest in locomotives and rolling stock and sell services to shippers or local communities for suburban and commuter passenger services.

Governments often forbid differential pricing for infrastructure access (all operators pay according to the same access charge formula, although this sometimes allows for differential pricing for different service bundles⁵¹. However, many state-owned railways continue to view the railway as an integrated monopoly and thus distrust the idea of separation of infrastructure from operations and the introduction of private operators.

6. Full Private Ownership

Rail freight services in the United States of America (USA) are fully privatized. Although the US rail transport market is dominated by large corporations such as Union Pacific, Burlington Northern Santa Fe and the CSX Corporation, freight services are also provided on

45. Thompson and Galenson.

46. van der Mescht.

47. World Bank Group.

48. Thompson and Galenson.

49. World Bank Group.

50. World Bank Group.

51. World Bank Group.

more than 500 privately-owned short lines, which is proof that smaller entrepreneurs can provide profitable rail services when they are unburdened by restrictive labour legislation⁵².

7. Public - Private Partnership

A public-private partnership (often referred to as PPP, P3, or 3P) in railways is a contractual arrangement between Government and private investors to provide public rail infrastructure and/or services and to share the risks associated with those investments and/or operations in some way. Such arrangements include private ownership and/or operation of trains, but typically include financing and management of infrastructure and services⁵³.

PPP arrangements differ from simple construction and service contracts in that PPP for railway transactions typically involve a contractually defined division of risk for provision of rail infrastructure or other investment for a public service. Government may participate in several ways⁵⁴:

1. Transfer existing assets;
2. Provide land;
3. Finance part or all of initial investment in infrastructure; or
4. Provide a revenue guarantee through a long-term contract.
5. Forms of tax relief or tax-related benefits.

A typical PPP railway transaction would be the construction and operation of a rail extension or urban rail services to an airport. Government may provide land; a private operator would build the line and operate the service for the duration of the public-private partnership (PPP) arrangement, and assume related risks. Revenue risks associated with passenger services could be mitigated through some direct revenue support from the Government under specific conditions specified in the contract. This is typically required when the operation on its own is not commercially viable.

CONCLUSION

Zambia should continue to prioritize the implementation of interventions and policies aimed at moving cargo from roads to rail which will prolong the life span of roads and enhance safety.

The rail sub-sector is designed to ferry huge volumes of bulk and heavy cargo through short and long distances. Among several advantages, rail transport poses minimal environmental externalities in comparison to other modes of transport such as the road.

The huge and unregulated shift to road has triggered an increase in the utilization of the road transport causing damage to the road infrastructure, increased road carnages, traffic congestion, pollution to the environment and Increased road maintenance costs and consequently reducing the useful life of the roads to approximately five years. Railways produce far less air pollution than other modes. Air pollution causes health costs, crop losses and building damage. Rail diesel produces 50% more air pollution than electric rail although this is still significantly less than car, suggesting electric railways are better adapted to passenger traffic. In non-urban areas, railways produce three times less air pollution costs than road freight and such gains could be valued in financing sources, using climate change funds.

To make the rail sector viable, Zambia should focus on increasing the role of the private sector as outlined in the SADC protocol on Transport, Communication and Meteorology. The option of unbundling the rail way sector should be exploited as it is the basis for promoting further private participation by liberating railway operations from fixed costs.

Others reforms include the expansion of contracting services and materials to develop private sector participation and stimulate increased private investment. There is need to encourage public-private partnership (PPPs) in rail sector and where possible, decentralisation of operations.

52. Thompson and Galenson.

53. World Bank Group.

54. World Bank Group.

RECOMMENDATIONS

- Government has intentions of developing rail spurs in intracity transit systems. **As PMRC we recommend that Government should strictly utilize Public-Private Partnership (PPP) to access private financing** given the constrained fiscal space.
- There is **need to dis-bundle the rail line operations, where rail infrastructure development and management** are separated from operations by the creation of the **Rail Development Agency of Zambia**
- The Government should **continue with the maintenance and upgrading of the rail infrastructure to reach the desired speed of 80 kilometers per hour for freight trains and, 120 kilometers per hour for passenger trains.**
- Zambia should **engage in Bilateral/Multilateral Railway Route management groups with other countries** to collaborate on rail use and infrastructure development to increase volumes and ensure suitability of the rail sector. This is in line with Africa Development Bank (AfDB) aspirations that larger railway markets in Africa should be promoted through increased cross-border cooperation.
- Government needs to **put in place regulatory bodies to monitor market performance, competition and even safety issues.** Currently no regulator is installed in Zambia for the railway sector except the General inspector of railways, based in the Ministry of Communication and Transport
- Government should change the policy environment and encourage private train operators to join the railway sector industry through the use of Government trail track owned by ZRL and TAZARA. These private train operators can then be charged for use of the rail track infrastructure; which in turn can boost Government revenues.

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Unlocking Zambia's Potential

Correspondence on this Policy Analysis can be sent to:
info@pmrczambia.net

Policy Monitoring and Research Centre (PMRC)
Plot No. 36C Sable Road, Kabulonga, Lusaka, Zambia
Private Bag KL 10
Tel: +260 211 269 717 | +260 979 015 660

www.pmrczambia.com

