MEMORANDUM

THE STATE AND MANAGEMENT OF THE RAILWAY SYSTEM IN ZAMBIA

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Introduction

The rail network of Zambia consists of two principal systems operated by Zambia Railways Limited (ZRL) and Tanzania Zambia Railway Authority (TAZARA). The ZRL network has a gauge length of 1067mm. The line has a total of 1062 km and stretches from Victoria Falls Bridge in Livingstone in the Southern Province to Chililabombwe in the Copperbelt Province. The network comprises of the main line from Kitwe to Victoria Falls Bridge (848km). The branch which is 214 km in length is for the sections between Choma to Masuku, Ndola to Luanshya, Ndola to Sakania, Kitwe to Chingola, Luano to Chililabombwe, Chambeshi to Mufulira, and Chipata to Mchinji.

The TAZARA railway network which totals 1860.562 km in length extends from Kapiri Mposhi to Dar es Salaam in Tanzania. The railway line is of the same gauge as ZRL rail line which is 1067mm. The portion of the track that is within Zambia’s borders is from Nakonde to Kapiri Mposhi for a total distance of 860 km. The rail network has not essentially changed since it was built in 1976.

State of Infrastructure

Zambia’s railway network suffers from two main constraints: poor track maintenance with respect to ZRL, and low availability of main line locomotives and wagons in the case of
TAZARA. These problems faced by the railways have resulted in considerably reduced service capacity and hence their present inability to attract more traffic.

**ZRL rail network**

*Track quality*

ZRL rail track is in a poor state and due to this current poor condition of the rail track, freight and passenger trains have been forced to move at average speeds of 20 Km/hr in some sections. Only 121 km (14%) of the 848 km is to the international standards of continuous welded rails with permissible speeds of 80 km/hr, while the rest of the track consists of jointed rail. Works are currently underway to convert 12.2m rails to 36.6m by welding and over 44km has been completed.

About 530 km (63%) of the mainline is on reinforced concrete sleepers while 318 km (37%) are either on wooden or steel sleepers. The wooden sleepers are in poor condition and require replacement with reinforced concrete sleepers. Re-sleepering of the track with concrete sleepers is currently underway with a total of 136.74 km of 442km being completed. Train speed restrictions have also reduced from 276.80 km as at January 2014 to 37.75km as at February 2016.

Further, several sections of the railway line have been overgrown with weeds and this makes maintenance of the line difficult to carry out. The depth of ballast on mainline varies between 50mm and 160mm instead of the required depth of 250mm to 300mm. Ballasting works on the rail line is currently underway on several sections.

In most sections of the railway line, the fencing of railway land reserve in built up areas is non-existence or has been severely damaged. Illegal settlers and traders have encroached on the railway line and land reserve in Lusaka, Chipata, Ndola and Kitwe. These illegal settlements on the railway land reserve have led to the vandalism and theft of rails and rail components. There has also been massive vandalism and theft of rails on the inter mine routes. Some sections of the railway land reserve have also been used as garbage dumpsites and others for mining of gravel and sand.

The communication and signaling systems are also in a poor state. Currently, ZRL is mainly dependant on the use of telephones and radio communications. ZRL is now installing a new signalling and telecommunication system (ERTMS-Level 3) that has three components (Signalling, Telecommunication and Information Technology). The implementation of this
project will enhance and ensure safety of the railway operations and increase track capacity and productivity.

**Rolling stock**
The Rolling Stock comprises locomotives, wagons and carriages and the associated plant equipment and machinery. ZRL does not have reliable and adequate rolling stock equipment. The rolling stock equipment is in a deplorable state and, cannot fully support the transportation of both freight and passengers in a sustainable manner.

ZRL commenced the overhauling of ten locomotives in November 2015 at Kabwe main workshops. The Locomotive overhaul involves replacement of all sub-assemblies with new ones, except for the main frame, which has to be re-qualified through non destructive testing. The workstation preparation and selection of the first four locomotive frames has been completed.

**Railway Stations**
Most of the railway stations with the exception of Livingstone, Lusaka, Ndola and Kitwe require rehabilitation. Further most of the stations are of old design and in particular, they were designed for accepting only one passenger train at a time, as there is only one platform or none on all main stations.

**TAZARA rail network**

**Track quality**
The track quality of the TAZARA line is much better than ZRL as it was built much later; therefore, it has fewer infrastructure issues that need to be addressed. The major problems in the railway infrastructure have been the maintenance of the landslide prone areas between Mlimba and Makambako in Tanzania. In addition, the communications and signalling systems are obsolete and require replacement with modern equipment.

**Rolling stock**
The rolling stock of TAZARA is generally in poor condition. A high number of the locomotives and wagons are outdated and require rehabilitation.

**Railway Stations**
The total number of stations on the Zambia portion of the line is 42, with the main railway stations located at Kapiri Mposhi, Serenje, Mpika, Kasama, Chozi and Nakonde which have
now suffered neglect and need urgent intervention. The condition of these stations is poor and they are in need of rehabilitation and facelifts or replacement.

Management

ZRL
ZRL is solely owned by the Government of the Republic of Zambia. It is mandated under the Railways Act (Chapter 453 of The Railways Act) to operate Freight and Passenger Trains. ZRL was incorporated in 1982 and was set up to be the main carrier of mining raw materials and supplies. From 2003 to 2012 the company was in private hands but little was achieved to change the once vibrant railway company to a modern railway firm. As a result, the Government repossessed the company from Railway Systems of Zambia in September 2012 with the aim of making the rail firm the main carrier of bulk cargo and passengers.

TAZARA
TAZARA is jointly owned by the Governments of Zambia and Tanzania, therefore any investments into the railway has to be discussed by the two governments. TAZARA is administered under a separate act from the Railways Act, it is administered under the Tanzania Zambia Railway Authority Act (TAZARA Act 454 of 28 September 1993).

Observations
Zambia’s railway network suffers from two main constraints: poor track maintenance with respect to ZRL, and low availability of main line locomotives and wagons in the case of TAZARA. These problems faced by the railways have resulted in considerably reduced service capacity and hence their present inability to attract more traffic.

The concession agreement of ZRL from 2003 to 2012 to a private company failed to turn around the company into a modern rail firm. Low traffic volumes complicate the financial viability of any concession arrangement. Therefore, the private sector should not participate as sole owners of rail infrastructure but as partners with the Government. Rail infrastructure requires huge investment and the return on the investment takes many years to accrue which may take too long for a private investor. The current installed capacity of the ZRL track is 6 million tons per annum, but due to low train speeds as a result of poor track conditions, this has led to reduced tonnage being transported. Emphasis must therefore be to invest in projects that will improve speeds, operations and customer satisfaction in the short term.
There is urgent need to fund feasibility studies for doubling of the mainline on ZRL and electrification of railway operations to reduce energy costs and improve efficiency in the transport sector. ZRL will require funding from Government to implement this project. Last but not the least, Speed restrictions on the main line are as low as 20 km/hr.; it is doubtful if customers are satisfied by the performance of ZRL passenger train service.

The organisation structure of TAZARA restricts the company from operating in a commercial way. This is because the direct involvement of the two governments in the decision making process makes it difficult to make commercial decisions that will not have implications for either of the two countries. The performance of TAZARA over the past 30 years has been below expectations primarily because it was undercapitalized from the start. There needs to be agreement between the two governments on how to energise the management and business operation of the railway. It is likely that the railway could be operated more efficiently and provide better quality services to customers with improved capitalization and business skills. A business plan to unleash the potential of the railway should be a priority action.

**Recommendations**

1. There is need for investment in local capacity in the production of concrete sleepers to meet demand, as opposed to importing them from outside the country.
2. Finding an equity partner to improve local manufacturing capacity of selected railway track tools and spares at the Railways Workshop in Kabwe, i.e. purchase of modern diagnostic equipment, test equipment and measuring instruments and tools.
3. Periodic assessment of track contractors to ensure highest levels of efficiency.
4. Employment of qualified track supervisors for improved quality control.
5. To increase train speed to between 80km/hour and 100km/hour when both the main and branch lines are maintained in good condition.
6. Reconstruction of most of the vandalized remote railway stations.
7. Manning of the neglected poorly maintained unmanned remote railway stations.
8. Training and equipping of railway security personnel to curb modern criminal activities, vandalism and land encroachment.
9. Completion of full track rehabilitation i.e. re-sleepering, deep screening, ballasting, rail upgrade and renewal, rail conversion, signage and earthworks etc.
10. The Governments of both Zambia and Tanzania should agree to choose an independent partner to commercially run TAZARA.

11. Training of more personnel to run TAZARA by enhancing capacity of the existing training school in Mpika.

12. Financial re-capitalisation of TAZARA in the form of rolling stock – purchase of new locomotives, carriages, wagons and other associated plant and equipment should be done.

13. Rehabilitation of the track and Upgrade the entire track to continuous welded rail to international standard by replacing all the sections that have jointed rail.

14. Wooden & steel sleepers to be replaced with reinforced concrete sleepers as concrete sleepers would last longer than the other two types.

15. Ballast depth should be increased to between 250mm & 300mm.

16. Most of the stations need to be redesigned as they are of old design and in particular, they were designed for accepting only one passenger train at a time, as there is only one platform or none at all main stations.

17. The stations should be re-designed to cater for both freight & passenger trains, and to facelift them to a modern standard & design.

18. Therefore feasibility studies to electrify railway operations to reduce energy costs and improve efficiency in the transport sector. The Diesel-Electric locomotives can be gradually replaced with fully Electric locomotives. The implementation of this project could commence with the sections between Lusaka and Kabwe and between Lusaka and Kafue. An efficient rail transport system between the three towns would encourage many people to live in Kafue and/or Kabwe, but report for work in Lusaka thereby reducing congestion on the roads in and around Lusaka. This section of the track can be used as a pilot project with the possibility of extending it to the rest of the rail track. ZRL will require funding from Government to implement this project.

19. In 2013 a similar request was presented to EIZ and most of these recommendations are contained therein. Hence forth, the authorities should be seen to act on these recommendations that are submitted to minimize on the ‘business as usual’ tendencies, thereby rendering all these submissions and reports academic exercises.

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