



Moving on the right track-From Road to Rail

Rowen Naicker and Dhiren Allopi

Department of Civil Engineering and Surveying Durban University of Technology P O Box 1334, Durban, 4000, South Africa.

ARTICLE INFO

Article history:

Received: 7 April 2016;

Received in revised form:

21 May 2016;

Accepted: 26 May 2016;

Keywords

 BRICS,
 Labor policies,
 Unemployment, poverty and
 Inequality.

ABSTRACT

South Africa (SA) has the most developed and largest economy in Africa. Being one of the members of BRICS our country is recognized as a key developing market. The factors that support this are its well-structured legal, financial transport and communication regions. SA is regarded as the best facilitator in trade logistics and has an excellent transport infrastructure. However, there are a few factors that have caused stagnation such as labor policies, unemployment, poverty and inequality. A recent article stipulated that rail was 75% cheaper on average than using road transport (Signs of new era for SA rail, 2015). If SA seeks to keep ahead of its African and Asian rivals and achieve global industrial competitiveness, its transport sector needs to sharpen up its act. The total road network in SA is approximately 747 000 km and is the longest in Africa which caters for approx. 321 056 registered trucks. The building together with maintenance of 16 200km of provincial roads are carried out by South African National Roads Agency (Sanral), with the Department of Transport being overall responsible. Despite the road sector delivering freight playing a major part in our economy due to its flexibility, adaptability and speed as compared to rail, the impact on the roads due to heavy freight moving vehicles has caused the maintenance and upgrades cost to escalate whilst our traffic demands are increasing. The operators in the industry of road freight face many challenges such as increases in tariff, permits and license fees. Further the e-tolls are weakening the profit margins. Labour negotiations and industry strikes have hit the sector hard, causing many businesses to undergo major restructuring and retrenchments. During 2013 the road freight industry shrunk by 4000 vehicles, resulting in the loss of 9315 jobs in the sector (Investment still needed in transport infrastructure, 2014).

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Introduction

The transportation of goods has increased tremendously in our South African road network. The demand placed on the transportation of road freight using logistic companies has increased, due to the complications faced by the rail industry. South Africans have experienced a significant increase in the transportation of goods on our road network.

However, according to technical and operations manager for the Road Freight Association, Gavin Kelly, he believes that if there was a reliable, efficient, safe and cost-effective rail service that could meet the needs of customers, then goods would travel by rail. There is not. That is why more than 80% of goods are transported on the road — for efficiency, cost, reliability, tracking and door-to-door service. In most countries in the world where rail is successful, bulk long distance commodities are transported, and there is a comprehensive, well maintained and well operated rail system. The country's rail network is 20 247km

The road infrastructure is deteriorating rapidly due to overloading and poor maintenance. Additionally, the huge number of accidents accredited to heavy trucks is intolerable.

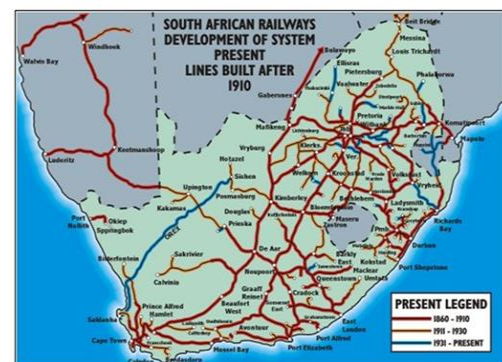


Figure 1. Railways lines built after 1910.

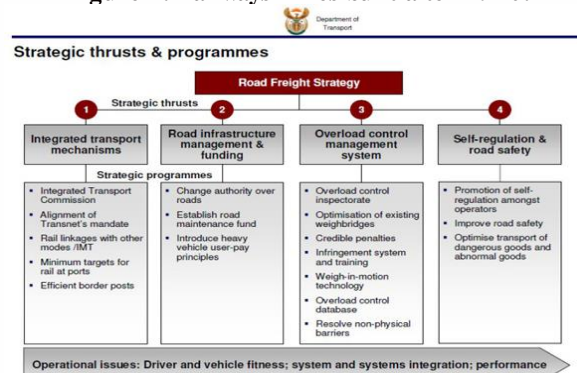


Figure 2. Department of Transport Road Freight Strategy.



Figure 3. Damage to roads due to heavy freight transport.
Objective

In order to achieve a stable freight infrastructure the country needs to shift from Road to Rail thereby reducing road congestion, greenhouse gas emissions and lowering transport costs for customers. The following article evaluates both road and rail transport systems and proves that rail is in fact the viable option.

What are the disadvantages of road transport in the Freight Industry?

- Overloading
- Speeding
- Poor vehicle maintenance
- Long driving hours
- Reckless driving
- False licenses (vehicles & drivers)
- Load securement
- Bribery & corruption

Regional Road Freight issues

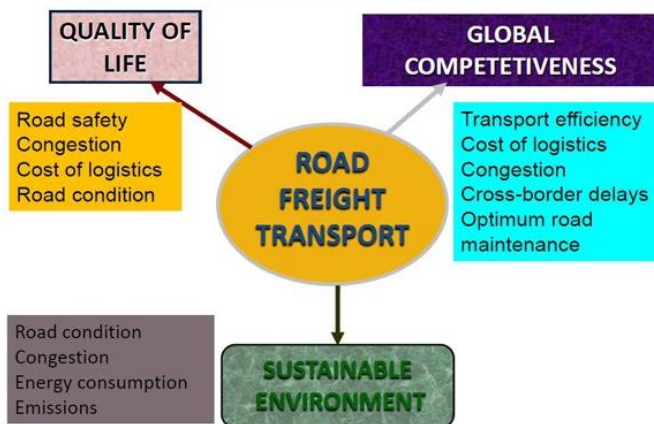


Figure 4. Diagram depicting regional freight issues.

The traffic authority has abandoned the weighbridge that was built to restrict the overloading of vehicles in the vicinity of the Port. This now permits overloaded vehicles to access the Durban Container Terminal, Bluff bulk terminals and the Island View chemicals storage.

Between 2000 and 2005 the Bayhead weighbridge, run by a private company reduced the level of overloading from 38% to 7% over about 2 years, before being taken over by Durban Metro police in 2005. The deteriorating operational efficiency and cost has now resulted in closure and redeployment of staff, leaving the road transport, shipping and forwarding industries wide open to overloading abuse (Durban Road Transport Free-for-All, 2014)

Trucks are being delayed by 4 to 14 days at the borders. This means that efficiencies are affected by start-stop delays

when raw materials run out because they are stuck at the border.

Overloading a vehicle will pose the following risks:

- The vehicle will be less stable, difficult to steer and take longer to stop. Vehicles react differently when the maximum weights which they are designed to carry are exceeded.
- Overloaded vehicles can cause the tyres to overheat and wear rapidly which increases the chance of premature, dangerous and expensive failure or blow-outs.
- The driver's control and operating space in the overloaded vehicle is diminished, escalating the chances for an accident.
- The overloaded vehicle cannot accelerate as normal – making it difficult to overtake
- At night, the headlights of an overloaded vehicle will tilt up, blinding oncoming drivers to possible debris or obstructions on the roadway
- Brakes have to work harder due to 'the riding of brakes' and because the vehicle is heavier due to overloading. Brakes overheat and lose their effectiveness to stop the vehicle.
- With overloading, seat belts are often not used as the aim is to pack as many persons as possible into the vehicle
- The whole suspension system comes under stress and, over time, the weakest point can give way.
- By overloading your vehicle you will incur higher maintenance costs to the vehicle – tyres, brakes, shock absorbers and higher fuel consumption
- Insurance cover on overloaded vehicles may be void as overloading is illegal
- Overloaded vehicles are estimated to be responsible for R400 million of unnecessary road damage per annum.

How does overloading affect our roads?

Overloading has been recognized to be both a safety concern as well as a cost concern, and the National Department of Transport has incorporated a campaign against overloading in its Road to Safety strategy.

Economic growth demands an adequate transport infrastructure. Overloaded vehicles, especially freight vehicles, are destroying our roads, impacting negatively on economic growth – the damage caused grows exponentially as the load increases. Damage to roads as a result of overloading leads to higher maintenance and repair costs and shortens the life of a road which in turn places an additional burden on the state as well as law abiding road users who ultimately carry the costs of careless and inconsiderate overloading. If the problem of overloading is not controlled, this cost has to be carried by the road user, which will require significant increases in road user charges such as the fuel levy, vehicles license fees, and overloading fees to mention just a few. Overloading is a safety hazard that leads to unnecessary loss of life, and also the rapid deterioration of our roads, resulting in increased maintenance and transportation costs.

Fatalities caused by Road Freight transport

On average there are more than 5000 people that die on South African roads each year, most of which has been caused by trucks (SA road deaths tragic but not surprising, 2016). Driver fatigue and a lack of vehicle maintenance of the trucks lead to accidents. One of the most deadly accidents occurred in Pinetown-Durban, when a truck drove through a red robot and rammed into three minibus taxis and two cars killing 27 people and injuring 80 others (Figure 5). The driver was charged with two charges of fraud, one charge of entering South Africa illegally, two charges of being in possession of fake driver's licence, one charge of operating a vehicle without

a valid professional driving permit, and one charge of failing to comply with a road traffic sign.



Figure 5. Accident in Pinetown-Durban (Truck driver arrested after Pinetown crash, 2013).

The latest stats mentioned in the speech by the Minister of Transport, Minister Dipuo Peters showed that between the 01 December 2015- 11 January 2016 the death toll on South African roads was 755 of which freight transport trucks contributed to 4.8% (Statement by Transport Minister Dipuo Peters on the occasion to release the preliminary festive season report for December 2015 and January 2016, 2016)

Some of the accident hot spots in Durban are

- Solomon Mahlangu (Edwin Swales) Drive/South Coast Road
- South Coast Road/Bayhead Road
- uMngeni Road/MR448/N2

Freeway (non-intersections)

- N3 freeway – vicinity of Westville Hospital and Pavilion
- N2 freeway – Westwood Mall
- N2 freeway – spaghetti junction (road under ramps north and south)

Advantages of moving from Road to Rail

- Less CO2 carbon emissions released into the atmosphere-shifting from road to rail is one of the measures of mitigating
- Less deaths due to poor air quality
- Energy efficiency
- Reduction of noise
- Safer mode of transport/less accidents
- Save much more space
- Less traffic congestion
- Reduction in damaging roads
- Cheaper logistics costs.

Disadvantages of moving from Road to Rail

- Commuters have set fire to trains
- breakdowns
- track theft

SAFTTS BLOGS

Shifting Cargo from Road to Rail in South Africa-Is it Possible in the Medium Term?

In 2012, President Jacob Zuma, President of South Africa announced in his State of the Nation Address that Transnet would invest more than R300 billion in infrastructure development to rejuvenate the economy, create jobs and address poverty and inequalities.

Of this amount, R200 billion will be channelled to Transnet Freight Rail to expand its rail infrastructure to create capacity and increase cargo volumes. Through investment, Transnet Freight Rail will be able to optimise its capital

portfolio, build a world class capital execution function and leverage capital procurement and localisation. In accordance with the strategy, the company has committed itself to railing more than 350.3 million tons of cargo a year by 2018 / 2019, the financial year when the “Market Demand Strategy” (MDS) will reach its maturity.

What can I rail?		Where can I rail?	
Iron Ore & Manganese	Coal	Inbound	Postmasburg
Ore	FMCG (Fast Moving Customer Goods)	Saldanha	Kimberly
Grain	Chemicals	Sishen	Port Elizabeth
Petroleum products	Maize	Durban Harbours	Pietermaritzburg
Fertilizers	Timber	East London	Pretoria- Sentrtrand
Wheat	malt	Worcester	Bethlehem
Gases	ammonia	Bellville	Bloemfontein
sugar	Fuel Different lime products	Ermelo	Kroon Stad
acids	Gypsum	Richards Bay	Waterkloof
fly ash	Dolomite	Ngudwana	Umkomas
hematite	Other building materials	Sasolburg	Polokwane
bulk cement	Bulk traffic	Mpumalanga	Vereeniging
bagged cement out	Steel products	Dunswarts	Vanderbilgpark
bound			
auto motives		Outbound	Swaziland
containers		Namibia	Mozambique
magnetite		Zimbabwe	Lesotho
		Botswana	

Figure 6. what and where can I rail with Transnet Freight Rail.

Land Freight Volumes

The estimated overall land freight market in South Africa is approximately 1.4 billion tons per year with 182 million tons on rail, 14 million tons on pipeline and the balance on road. The total volume of long-haul road freight is approximately 180 million tons, with all the balance of road freight being urban and rural short-haul and door-to-door distribution.

The railway handles approximately 182 million tons per year of mainly block train consignments of primary minerals [ores, coal] and primary and secondary commodities such as timber, steel, grains, fuels, cement, containers and chemicals and smaller proportions of industrial outputs, imports and exports such as motor vehicles. The approximate annual volumes of commodities carried by the railway in 2005/6 is shown in the table below. The top seven bulk commodities account for 95% of total annual volume.

Commodities	Tons (Mill.)	%
Coal	87.6	48.1
Minerals	59.0	32.4
Grains	5.8	3.2
Metals	5.7	3.1
Cement	5.7	3.1
Wood	4.9	2.7
Containers	4.4	2.4
Fuels	3.3	1.8
Chemicals	2.4	1.3
Other: Miscellaneous	1.4	0.8
Agricultural . Products	1.3	0.7
Beverages	0.4	0.2
Machines/Vehicles	0.3	0.1
Agricultural Crops	0.1	0.1
TOTAL	182.2	100

Table 1. Commodity split on rail. Potential for Modal Shift

There is continual debate about competition between road and rail transport, and at national level, a stated official intention to reverse the trend towards increasing volumes of

road freight transport. In evaluating the potential for achieving the objective of shifting a significant tonnage from road to rail it is necessary to appreciate that the current situation is the logical outcome of policy decisions taken by the government over the past 22 years, and reversing the process will require some very careful planning decisions in the future (Durban Road Transport Free-for-All, 2014).

Road Cost Recovery

The motivation for the need to transfer freight from road to rail is usually quoted as the fact that funds to maintain roads at current utilisation levels, are not available (unless fuel taxes are to be diverted from other social objectives).

It must be recognised that freight transport is an integral and essential part of the industrial supply, production and distribution activities of commerce and industry, so significant increases in charges for use of the roads by whatever means, will necessarily have inflationary impacts on economic activity, employment and international competitiveness. It is also noteworthy that if an alternative rail freight strategy is not more cost effective than road haulage it will have the same effect.

Modal Shift as a Solution to Road Costs

The potential for modal shift as a solution to the increasing costs of road maintenance in the medium term is limited to the commodities that are currently transported by road over distances greater than 400 kilometres. The road surveys of major corridor traffic that were performed in the period up to 2007 gave clear indications of where the potential lies for planning effective strategic action, but these have been largely discontinued and most available road freight volume information is becoming increasingly dated.

For the future sustainability of the South African freight transport system, it is imperative to analyse the real situation in relation to various industries and their transport requirements in order to identify where there is potential for attracting cargo to rail. The evaluation process must be based on realistic assumptions in terms of the service levels that can be offered on rail and the rates that will apply. It is not possible to make arbitrary business decisions for the industrial users of freight transport. There is some potential for modal shift but it is limited, except for a few major corridors, and is unlikely to be sufficient to make a material difference to the

overall cost of roads in the foreseeable future (Durban Road Transport Free-for-All, 2014).

Conclusion

With road congestion, environmental issues and South Africa's high logistics costs increasingly under the spotlight – and hampering our ability to compete in the global marketplace – the time is ideal for an “intermodal renaissance” that will enable South African companies to leverage the strengths of both road and rail transport

There are numerous environmental benefits such as a lesser amount of noise and air pollution and lesser carbon emissions. The total cost of logistics in South Africa alone in 2010 amassed to approximately 339 billion rands.

Ninety percent of goods are transported in containers today, so switching from Road to Rail will be the perfect solution.

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