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# The implementation of the national passenger rail plan on priority corridors

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# THE IMPLEMENTATION OF THE NATIONAL PASSENGER RAIL PLAN ON PRIORITY CORRIDORS.

**By**

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**Research presented for the degree of Masters of Management in Public Policy to the faculty of Commerce, Law and Management of the University of the Witwatersrand, School of Governance**

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# ABSTRACT

The National Rail Passenger Plan was approved by the Cabinet of South Africa in 2006, as a blueprint to arrest the decline of passenger rail in the country. This was developed at the backdrop of the consolidation of the rail entities where passenger and freight rail will be separately managed. South Africa's passenger rail system was underpinned by years of underinvestment. South Africa has experienced the terminal decline pertaining to the market share in passenger rail.

The entire rail assets i.e. both above rail and below rail were in a state of collapse and as such the national passenger rail plan was therefore a right intervention. The approach of the plan was to position rail transport as one of the key mode for public transport solutions. The Priority Corridors strategy was introduced as method to target the focused implementation methodology. The strategy approach was to look at corridors with high ridership in order to have an impact. Around 2.2 million, mainly low income, working people use the commuter network everyday to access employment opportunities.

The focus of the research study was to understand the progress which has been made with regard to this strategic intervention. Critical is to understand what are the shortcomings that impede the implementation of national passenger rail plan in South Africa. To answer this question, the study focused on the documentary analysis and interviews as part of the data collection methodology.

The findings of the study were able to demonstrate on which aspect of the strategic infrastructure investments projects were implemented in priority corridors. Some of the aspects which have been implemented include track rehabilitation, new signal equipment and station upgrades in priority corridors. However, there were challenges that were experienced during the implementation. The study findings revealed that funding of the programme implementation is one of shortcomings that delayed the implementation of the national rail plan. Other findings include the lack of capacity and technical skills; and lack of leadership in implementing the strategic projects in the priority corridors. The study recommends that for sustainable rail operations, funding

should be mobilised, Prasa structure should be realigned and the rail regulatory framework should be finalised.

## ACKNOWLEDGEMENTS

This study is the contribution by a number of people who I cannot mention all of them because the list is countless.

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To my mother, for your continuous encouragement and prayers that has strengthen me to made this far. This one is for you, you always taught me that education is the key to a better future. To my Father and my siblings Mapokane, Mantsha and Nkidi being there in my life is a direct contribution to good things.

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To my colleagues in the rail sector inclusive of the Department of Transport Rail Branch, Passenger Rail Agency of South Africa, Railway Safety Regulator and Industry Experts, your efforts and availability to contribute to this study was worth it. I will always be indebted to you for the knowledge and the insight you shared.

As they say Information is power.

## DECLARATION

I, Ngwako Makaepea, declare that this research report is my own work, except as indicated in the references and acknowledgements. It is submitted in partial fulfilment for the degree of Master of Management in Public Policy. It has not been submitted before for any degree or examination in this or any or other University.

Ngwako Makaepea

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Signed at Johannesburg

On the _____ day of _____ 2017

# GLOSSARY OF TERMS

| | |
|---|---|
| **Above rail** | Pertaining to fixed rail network infrastructure such as Earthworks, rails and sleepers |
| **Below rail** | This is rail infrastructure which includes both track and signalling Systems |
| **Concession** | Granting of a right by a statutory authority to one or more Conscessioning entities to operate, build, finance, maintain railway asset or Services on all or part of the network for defined period in return for agreed undertakings by the concession are |
| **Commuter Rail** | Passenger rail services that provide daily travel between home and work. |
| **Corridor** | A linear single-or multimodal route characterised by few or no branches that can muster sufficient coherent traffic to achieve economies of scale and thereby support substantial investment to carry such traffic effectively and efficiently. |
| **Integrated public Transport network** | A system in a particular jurisdiction that integrates public transport modes and services, with real time information, through-ticketing and other enabling functionalities, to provide users with seamless travel solutions between origin and destination, as per the NLTA. |

| | |
|---|---|
| **Network** | A system of railway infrastructure that connects and serves a multiplicity of separately located nodes. |
| **Private Sector** | The part of a nation's economy that is owned and controlled by Government to facilitate or provide basic social services such as health, defence, education, justice and transport. |
| **Rail** | The transport mode provided by railways. |
| **Railway** | A guided system for the movement of rolling stock that has the capability of transporting passengers or freight. |
| **Rail Sector** | The subset of the Rail Industry that is engaged in actually delivering freight of passenger rail services, i.e. infrastructure of network operators, and train operators. |
| **Rolling stock** | Vehicles that are able to operate on a railway, irrespective of their capability of independent motion. |
| **Station** | A facility for passengers to enter or leave a train, including a railway passenger terminal and a passenger halt and may include facilities for passenger modal transfer and commercial activities forming part of the station and also includes any other place that may be prescribed, but excludes that part of the network running through the station. |
| **Vertical Integration** | The institutional integration of the entity responsible for managing railway infrastructure with the entity undertaking the operation of passenger and/or freight railway services. |
| **Vertical separation** | The institutional separation of the entity responsible for managing railway infrastructure from the entity undertaking the operation of passenger and/or freight railway services. |

# LIST OF ACRONYMS

| | | |
|---|---|---|
| **BoC** | **:** | Bombela operating Company |
| **BRT** | **:** | Bus Rapid Transit |
| **CBD** | **:** | Central Business District |
| **DoT** | **:** | Department of Transport |
| **EU** | **:** | European Union |
| **FS** | **:** | Ferrovie dello Stata |
| **GMA** | **:** | Gauteng Management Agency |
| **JNR** | **:** | Japanesse National Railways |
| **MSA** | **:** | Moving South Africa |
| **NDP** | **:** | National Development Plan |
| **NPM** | **:** | New Public Management |
| **PFMA** | **:** | Public Finance Management Act |
| **PNRP** | **:** | Preliminary National Rail Plan |
| **PRASA** | **:** | Passenger Rail Agency of South Africa |
| **PTA** | **:** | Pretoria |
| **RDZ** | **:** | Rossiyskie Zeleznye Dorogi |
| **RSR** | **:** | Railway Safety Regulator |
| **SARCC** | **:** | South Africa Rail Commuter Corporation |
| **SBB** | **:** | Swiss Federal Railways |
| **SIIP** | **:** | Strategic Infrastructure Investments Projects |
| **SOE** | **:** | State Owned Enterprises |

**TOCS** : Train Operating Companies

**UK** : United Kingdom

**US** : United States of America

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# CHAPTER ONE

## 1.1 INTRODUCTION

In December 2004, Cabinet of the Republic of South Africa approved the consolidation of rail entities and the approach was implemented in two phases. Government wanted to achieve the vision that railways should play a role in serving its customers and developing the economy of South Africa. Consolidation was necessitated by three reasons namely; institutional fragmentation both at entity level and public transport management level, secondly the investment backlogs and funding dilemma of passenger rail and lastly the regulatory regime around achieving social objectives and profit making.

The first phase entailed the consolidation of Metrorail within the South African Rail Commuter Corporation (SARCC) and the second phase involved the establishment of a new passenger rail company which will incorporate assets, finances and personnel of Metrorail, Shosholoza Meyl and SARCC. The key thrust of the consolidation process was to separate passenger operations from freight operations. This approach emphasised the need for Transnet to focus on freight services as a key instrument to support government broader activities of economic growth and job creation (GCIS, 2004)

This was a major institutional reform in the history of passenger rail in South Africa. The Department of Transport (DOT) had to provide leadership to ensure the institutional mechanisms are dealt with, through a framework which represents government direction. This gave birth to the National Rail Plan process to assist with the consolidation process of the rail entities in providing a business case. Beyond the business case the rail plan provided a strategy for the passenger rail sector in South Africa. (DOT, 2005) The Department took ownership of this process working with SARCC and Metrorail through the Rail Management committee. The National Rail Passenger Plan was approved by Cabinet in 2006.

## 1.2 **BACKGROUND OF THE STUDY**

National Passenger Rail Plan objective was to arrest the decline in passenger rail services and secure a sustainable passenger rail services. The approach was to concentrate the majority of available resources on high intensity 'Priority Rail Corridors'. The determination of these corridors is based on where rail is able to perform to its strength as a high capacity people mover. Other routes will be retained but given lower priority until such time as the business prospects of the industry improve (DOT, 2005). The main benefit of the priority corridors strategy is to offer the only sustainable option to restore value for money for Government's investment in passenger rail transport. In the medium to long term the National Rail Plan holds out the prospect of increased use of the rail network on the priority corridors with more effective, regionally based monitoring of finances and operational performance (SARCC, 2006).

### 1.2.1 **National Passenger Rail Plan**

By 2004 the rail business in South Africa was facing serious challenges such as peak hour services operating at crush loading, network utilization being below capacity due to rolling stock unavailability. Government and the rail commuter business were in dire need of a national plan to align national policies, travel needs and business requirements, with implementation plans, for the rail commuter business. The Department of Transport started the process of the National Passenger Rail Plan known as the Rail Plan. The methodology applied in the Rail Plan process was to examine the current role of commuter rail transport within the wider travel demand trends in South Africa and, to analyse and quantify the financial, operational and technical dynamics of the industry (DOT, 2005).

The process of the Rail Plan was divided into two phases. The first phase focused on developing the overall strategy for the passenger rail sector and the preparation of regional rail plans for a focused new strategic direction. During the second phase the department focused on consultation with provinces and metropolitan authorities in the finalisation of regional plans. More emphasis was to quantify the specific infrastructural and rolling stock interventions required to restore the levels of service in regional corridors (SARCC, 2006).

At a strategic level the implementation of the plan targeted both operational and infrastructure improvements in priority corridors. In the Tshwane region the interventions on the Mabopane - Pretoria Central corridor included station upgrade in Pretoria North, replacement of electrical equipment's such as traction transformers. Mamelodi - Pretoria Central corridor interventions included platform extensions at Mamelodi stations and track upgrade and track doubling on the corridor. Wits region interventions focused on Soweto - Johannesburg and Naledi - New Canada corridors. The interventions include signal systems upgrades, station upgrades, electrical upgrades such as replacing the 6, 6 KV with 11 KV and track rehabilitation and upgrade (SARCC, 2006).

### 1.2.2 **South Africa Rail Commuter Corporation**

South African Rail Commuter Corporation (SARCC) was established on 01 April 1990 to provide commuter services throughout the republic. However, SARCC played a limited role in terms of the management of the rail commuter system in South Africa. The role of the SARCC mainly evolved into that of national subsidy manager (operating and capital subsidies). As a result, capital projects were driven by engineering requirements and budgetary provisions, whilst operating subsidies were determined by institutional mandates (SARCC, 2002).

Passenger Rail Agency of South Africa (PRASA) was established through the legal succession to the South African Transport Services (SATS) Act of 1989 as amended in November 2008. PRASA is listed under schedule 3B of the Public Finance Management Act (PFMA). It reports to the Minister of Transport as a shareholder. It has two rail divisions namely Metrorail and Shosholoza meyl. It has other divisions such as Autopax which focuses on intercity bus services and Prasa Crescent which deals with property development, rail estate management and facilities management (Legal Succession, 2008).

PRASA will be the implementation arm of government in the rolling out of the national passenger rail plan initiatives. It must develop the implementation tools and strategies to ensure that the rail plan realises its objectives. They must determine and quantify the inventions needed including packaging the funding needed. This will help Government in motivation of funding from the National Treasury.

## 1.3 **PROBLEM STATEMENT**

The South African rail sector has experienced terminal decline over the past two decades due to underinvestment. Commuter rail accounts for 13% of commuter transportation market share with buses and taxis accounting for the majority of market share.. The first passenger coaches were bought in the 1960s the namely the 6M up to 8M series. The last acquisition of the coaches was the 9M generation which was done in the 1980s. Considering the lifespan of the railway assets it is evident that these assets are nearing their life cycle. The coaches spent significant amount of time in the workshop for maintenance, than been deployed for service. The passenger trips per month have dropped from 42.28 Million around 1998-99 to 38.76 Million in 2002/03 (Prasa 2008). The current rail commuter system needs a serious overhaul, turn-around and improvement strategy to serve the people of South Africa (DOT, 2005).

The challenges that faces the commuter rail in South Africa comprises of obsolete infrastructure and over age equipment such as signaling and unreliable rolling stock. Allocated rolling stock is always out of service which causes the level of service not to reach the desired levels by customers. The National Passenger Rail Plan becomes a critical policy instrument to provide framework for a passenger rail system for the country (SARCC, 2006). The proposed intervention were planned to be implemented in seven years but to date not all initiatives have been realised. A critical analysis of what are the implementation bottlenecks that hamper the effective implementation of the rail plan is needed to identify adequate intervention mechanisms.

In the short term PRASA managed to develop the strategy to arrest the decline that included developing a 90-day turnaround plan for trains. The plan focused on operational issues such as train timetables, service standards, safety and security of passengers. PRASA have managed to implement the infrastructure projects such as refurbishment of rolling stock (709 coaches) , 44 stations upgrades at the tune of R96 Million, a five year programme to upgrade the signalling system in Gauteng through the Gauteng nerve centre project and lastly the track renewal programme in the entire commuter rail network (Prasa, 2009).

## 1.4 PURPOSE OF THE STUDY

The purpose of the study is to investigate the implementation challenges of the National Passenger Rail Plan within priority corridors. This were termed A and B corridors through the corridor categorization process which will be discussed further in the study. The study will focus on priority corridors in the Gauteng Province situated in Tshwane and Wits regions. The key issue is to interpret and analyse the findings of the implementation approach and key bottlenecks. Subsequently recommend intervention strategies to assist in fast-tracking the rolling out of rail plan imperatives intended to rescue the passenger rail system in South Africa.

## 1.5 RESEARCH QUESTIONS

### 1.5.1 Primary Research Questions

1.5.1.1 What are the shortcomings that create the implementation challenges of national passenger rail plan in South Africa?

### 1.5.2 Secondary Research Questions

1.5.2.1 What is the progress with regard to strategic infrastructure investments in priority corridors?

1.5.2.2 What are strategies to be considered by PRASA and the Department of Transport to ensure successful implementation of the national passenger rail plan?

# CHAPTER TWO

# 2. INTRODUCTION

## 2.1 LITERATURE REVIEW

Literature review according to Bryman (2012) it is a critical step in the research process. It helps one to discover the body of knowledge with regard to the chosen area of research. It unpacks the fundamental theories and concepts around the subject matter (Bryman, 2012). Neuman (2011) adds to the importance of doing literature review in any study because one tends to understand the views of other authors on the issue before putting your own angle.

## 2.2 CHALLENGES IN IMPLEMENTING RAIL REFORMS

It is critical that when governments reform their railways the objectives and rationale are clarified from the onset of the process. Owens (2004) states that the decision making should be informed by number of issues but key being understanding the characteristics of the rail network to be reformed. At another level it is essential to understand the economics of the rail network. Consideration should be made regarding the role that both freight and passenger rail play in any jurisdiction. Freight operations are generally commercially orientated in the quest to make profits while urban passenger rail service is of social good and does not make profit hence it relies wholly on government subsidy (Owens, 2004).

### 2.2.1 Institutional Structure

Amongst the challenges in implementing reforms, one important element is the institutional structure that a particular country adopts. Based on the literature reviewed from different countries it is apparent that the choice of the institutional structure of railways determines their failure or success. The vertical separation and vertical integration' institutional models will be explored as part of this study.

Vertical separation is defined as "the institutional separation of the entity responsible for managing railway infrastructure from the entity undertaking the operation of passenger and or freight railway services" (DOT, 2015). This model is embedded in the European

Union (EU) approach of the railways reform and it is even entrenched in their EU railway legislation. The EU argues on the transparency of this model and believe that if infrastructure ownership is separated from train operations, it introduces an element of competition of tracks which result in efficiency within the rail system (Meyer and Meier, 2011). The Italian railways system in their later years of rail reform subscribed to the model of vertical separation. This was evident in the process of restructuring of Ferrovie dello Stato (FS) and the creation of the infrastructure manager as from Trenitalia as the rail operator (Senn and Cini, 2011).

The vertical separation model brings an element of competition within the rail sector which is characterised into competition for the market and competition in the market. Competition in the market is practice in a number of European countries where numbers of operators compete for the same market. It has proven to be a mechanism that create better interaction between operators and its customers and in turn improves the efficiency of the system. Competition in the market normally happens when competition for the market does not work. It applies to the monopolies in the quest to provide a social service (Senn and Cini, 2011).

The competition for the market was also practiced in the British railway system and introduced privatisation and a regulatory regime. The privatisation changed the structure of both freight and passenger railways. Railtrack was created as an infrastructure manager responsible for below rail assets and was later sold as Infrastructure Company. Rolling stock leasing was divided into three companies. Freight companies were also privatised and with passenger rail franchised through 25 private sector train operating Companies (TOCs). These TOCs created the competition for market arrangements with clear open access policy framework (Nash and Smith, 2011).

Vertical Integration is defined as “the institutional integration of entity responsible for managing railway infrastructure with the entity undertaking the operation of passenger and or freight railway services” (DOT, 2015). This model was applied in the Japanese and Swiss railways. The key thrust of this model preaches the principle that integrating infrastructure and operation is not against competition. It has other advantages such as the planning of infrastructure, efficient network use and to streamline investment opportunities across the sector. The Swiss had Swiss Federal Railways (SBB) owning the infrastructure and operating trains. In order to introduce the transparency in their rail

reform the Swiss introduced accounting separation in relation to rail infrastructure and rail operations within SBB. This accounting practice was to deal with issues of cross-subsidisation. (Meyer and Meier, 2011). This model is also implemented in the South African railway sector where Transnet and PRASA are vertically integrated and having access arrangements on each other's network. This has proven to be a challenge amongst the two operators.

The models of institutional structure does not produce the same result across all jurisdictions. This is always a challenge and countries reforming their railways must do a thorough analysis before implementing the institutional structure.

### 2.2.2 **Funding**

Funding forms a critical element of any railway reform and the success lies within the financial resources available to execute the task. It is one most of the challenges in executing successful railway reforms. Different forms of funding streams are available in the funding of railways such as the fiscus through government, funding secured through the markets using company assets and involvement of private sector involvement in rail projects (DOT, 2015).

Historically most railways when they reach a stage of terminal decline experienced financial difficulties. It is important that when countries reform their railways the state owned companies are in a better financial position. The Japanese government in their rail reform had to devise a strategy to deal with long-term debts that have been accumulated by the underperforming railway companies. Japanese National Railways (JNR) went through a major reform in the history of its railways. JNR was privatised while having liabilities amounting to 37.1 trillion yen due to bankruptcy. This was shared amongst the freight company and three passenger rail companies namely JR East, JR Central and JR West based on the amount of asset accumulated. This strategy reduced the financial budget across all operators and JNR was in a better financial position to deal with new investments (Ishida, 2011). This strategy proved to be successful in their reform and laid foundation of the Japanese world railways we see today.

Italian government in their rail reform had to intervene in the historic debt of the railways. Secondly they realised that infrastructure was a strategic asset to revive the Italian railways. That was done with the state intervening by funding the infrastructure and funding the operations of passenger services. Government initially covered 40% of high speed infrastructure but it was not sufficient. A new model where infrastructure funding will be totally in the public owned company (Ispa) will ensure better contribution and control. This was further legislated through the Budget Law of 2006 which consolidated Ispa into Cassa Depositi e Prestiti S.p.a companies and grant concessions with state funds injection for almost 15 years. The mandate of the new companies was to ensure that state has significant role to play in ensuring state funding (Senn and Cini, 2011).

Public funding was key priority in Switzerland railway system. The Federal state and Cantons have invested large sums of public fund in rail infrastructure development. For example, the transalpine rail corridor investment amounted to around €12 billion (Meyer and Meier, 2011).

### 2.2.3 **Government Involvement**

The state role and political influence in the running of railways has both advantages disadvantages, if not managed properly can lead to unintended consequences. The Italian railways was originally a wholly government owned. The restructuring of the state owned company Ferrovie dello stato (FS) to implement competition reform, redefined the involvement of government railways. In this case the Italian government role was strategically guaranteeing the resources to cover investment and the financial implications of the employees who were laid off for early retirement. FS became independent from the Ministry of Transportation. The management of FS applied business principles to manage the company free from political interference (Senn and Cini, 2011). As the reform progress well in the Italian context the state had conflicting interests e.g. shareholder, grantor in the running of railways.

Other countries like Switzerland has leveraged their financial resources to provide infrastructure funding and create a policy framework to enable their railways to prosper (Meyer and Meier, 2011).

## 2.3 **BEST PRACTICE CASE STUDY**

The challenges facing South African railways are not unique; many countries have developed strategies to rescue their railways when they reached a terminal decline. The study will look at the following countries' strategic interventions namely the United States and Russia.

### 2.3.1 **United States Of America**

The United States (US) have provided a legislative framework to ensure the development of the railways through the Passenger Rail Investment and Improvement Act of 2008 (PRIIA). The Act mandates the Federal Railroad Administration (FRA) to develop a Preliminary National Rail Plan (PNRP). The focus of the plan was to consider both freight and passenger needs and demands. PNRP was the first step in developing the long-range National Rail Plan in setting up the methodology and the fundamental framework to be followed (FRA, 2009). The process of developing the PNRP was led by the FRA with the involvement other states to insure there is a synchronisation between the States plans and the rail needs of the American nation.

The market structure of the US railroads consists of freight and passenger railroads as separate systems. Freight railroads ownership rests in the hands of the private sector with the core objective of making profit, while Passenger railroads are rendering a public service and receive subsidy. National Railroad Passenger Corporation (Amtrak) provides for the intercity passenger rail services (FRA, 2009). The separation from freight and passenger railroads was precisely to focus the business and improve the delivery of effective and efficient rail service. One observation to make is that the US Preliminary National Rail Plan focused on rail as part of the national transport system. The concrete plans developed covered both freight and passenger considering their interdependence.

The PNRP had three objectives, firstly to ensure that both freight and passenger rail performance increase to improve their contribution in the national transport task. Second objective dealt with rail integration within the transport network. The emphasis is how to make rail together with other modes of transport as tools to enable the US to achieve broader socio-economic objectives. The third objective focused on the

identification of strategic projects that will be of national significance. One of the key projects was the High speed rail projects and the funding dynamics to deliver on them (FRA, 2009).

The Preliminary National Rail Plan focused on additional attributes that rail as a strategic mode of transport can bolster to the US Department of Transport overall vision. Those includes key issues such as crafting a new vision for transport, improving overall transport safety across the modes, contribution to the fuel efficiency thrust, assist in environmental challenges and creation of much needed jobs to the nation (FRA, 2009).

### 2.3.2 **Russia**

The Russian railway structure was monopolistic with Rossiyskie Zeleznye Dorogi (RDZ – the Russian Railway) operating both freight and passenger and owning infrastructure. Government through the instruction of reforms had some strategic objectives which included ensuring quality, efficient and safe railway services. Secondly to meet the demands of rail transport from customers as part of a broader public transport system (Winner and Evdokimov ,2001).

The initial reform started in 2001 with the aim to introduce competition in the rail sector through instruments such as policy and legislation. Private investment in the rolling stock was only provided by RDZ and ownership and operation of locomotives was high on the reform agenda. The overall aim of the reform was to transform the Russian railway sector to be inclusive of all players (Murray, 2014) (Anton, 2008).

With a transformed railway sector the government of the Russian Federation approved the Development Strategy for Railway Transport till 2030. The strategy vision was to create a long-term development for the Russian railways. The key thrusts of the strategy was to ensure a holistic approach to all beneficiaries of rail transport inclusive of Shippers, Passengers, Investors, producers of railway technologies, regions and for the State (Winner and Evdokimov, 2001).

The first stage of the strategy was 2008 to 2015 which was focused on the Modernisation process to increase capacity on the key corridors, upgrading the existing network and further extension. All these initiatives targeted the Russian Economic

zones. This strategy was necessary to support the economic growth of the country. The second stage was from 2016 to 2030. The focus of this stage was to expand the Russian network in order to develop new markets in the mushrooming economic zones of the country (Russian Railways, 2014).

The strategy stipulated key targets included for RZD to acquire new rolling stock, increase the Russian Federation rail network by constructing new railway lines, upgrading the rail infrastructure on bypasses and bridges, expanding the high speed lines with technological innovation and an ensuring the funds for the infrastructure projects are sourced (Murray, 2014).

RDZ projects were initially funding from state coffers and due to the massive infrastructure expansion, they had to explore public private partnerships. RDZ had the majority stake in those projects initiated with the private sector. They have designed a loan programme which explored a number of initiatives such as bilateral loans, rouble loans and Euro bonds (Russian Railways, 2014)

### 2.3.3 **South Africa**

The vision for transport in South Africa find its basis in the National White Paper on Transport Policy of 1996 which is to "Provide safe, reliable, effective, efficient and fully integrated transport operations and infrastructure which will best meet the needs of freight and passenger customers at improving levels of service and cost in a fashion which supports government strategies for economic and social development whilst being environmentally and economically sustainable**."** The white paper further alludes that "Rail is seen as an essential long-term component of the network for both freight and passenger transport."(DOT, 1996).

Another critical policy document for the country was the Moving South Africa (MSA) which its intention was to operationalise the policy statements in the white paper. MSA made some pronouncement on urban transport with particular emphasis on densification of transport corridors, integration across all modes of transport and determining infrastructure requirements for appropriate corridor (DoT, 1998).

The above mentioned policy framework provided the basis for developing the National Passenger Rail Plan for South Africa. The purpose of the plan was to come up with a

strategy to rescue the passenger rail system and building a business case to fund the infrastructure requirement needed within priority corridors (SARCC, 2006).

The National Rail plan was a very interactive process involving the Department of Transport, SARCC, Metrorail, Provinces and Metropolitan Authorities. The rail plan was an eighteen months project where the Department of Transport appointed a team of consultants with international experience to lead the process. The process was divided into two phases which included the development of national rail plan, regional plans which were inclusive of corridors operational and funding requirements (DOT, 2005).

South African railway market structure consists of freight and passenger transport as part of the national transport system. Transnet is the current freight operator and transport commodities such as general freight business, coal, iron, ore and manganese. Transnet in its annual report indicated that it had transported 176.6 millions of tonnages (mt) of its commodities across the world (Transnet, annual report, 2012). PRASA is the biggest passenger operator and transport 2.2 million passengers daily to place of work and other destinations. It covers major metropolitan areas such as EThekwini, Cape Town, Johannesburg and Tshwane (www.prasa.com). Both this railway companies are owned by the government of the Republic. An observation to make is that the National Rail Passenger Plan process only focused on passengers and neglecting the freight sector which was a missed opportunity of totally integrating the rail transport with the national transport system.

The process of the rail plan came with different corridors namely A, B, C and D corridors by analysing a number of performance indicators such operational financial and asset performance per corridor.

The ‘A’ corridors are corridors where rail is the mode of choice with passenger volume of 20 000- 30 000 passengers per hour. Examples of those corridors in Tshwane include Mabopane – PTA – CBD and Mamelodi – CBD. The ‘B’ corridors, are included corridors where passenger rail is justified but the level of service is lower than corridor A service but need to be improved to the acceptable levels. The ‘C’ corridors represented corridors where the case for rail is uncertain. The ‘D’ corridors included corridors where there was no case for rail during the rail plan development process. The ‘A’ and ‘B’

corridors became known as the priority corridors which was the targeted areas of implementing the rail plan strategic interventions (DOT, 2005).

Priority rail corridor strategy broader objectives include:

- To operate successfully rail must be a part of a modally integrated transport service in which each mode is deployed only in situations where it can perform optimally;
- The strength of rail passenger transport is most evident on high density routes/corridors;
- Effective, higher density rail corridors can be identified in the main rail network regions;

To succeed, the strategy will require urgent acceleration of the programme of rolling stock overhauls as well as radical changes to the rail industry business model, in order to allow the private sector involvement in the delivery of the rolling stock programme. The urgency derives from growing user dissatisfaction with deteriorating service levels as well as operational safety concerns.

In order to enhance the corridor strategy approach to be realised, the rail plan alluded on strategic infrastructure investments for those corridors. These include improvements on the peer way, signalling upgrade and station upgrades. Secondly rolling stock that needs to be deployed in the A and B corridors was determined. These include peak hour rolling stock to deal with crush loading and rolling stock requirement for higher service levels (SARCC 2006).

The key instrument to implement the National Passenger Rail Plan was to engage in a business plan process to inform the process of investment prioritisation. The entire requirements including the cost for all regions was determined to inform the national budgetary requirements to be submitted to the National Treasury (SARCC, 2006).

## 2.4 **THEORETICAL FRAMEWORK**

Theories are critical basis for shaping any study for it to be related to the way system in a society works (Neuman, 2011). Theoretical framework of this study will be based on the tenets of institutional theory and the new public management theory. Both these theories are relevant to the study and will attend to position National Passenger Rail Plan within the institutional theory policy discourse.

### 2.4.1 **Institutional theory**

Institutional policy is the study of institutions and how they contribute to different aspects of the society. This are either historical, sociological and economic (Hill, 2005). Scott (2004) defines institutional theory as “theory that attends to the deeper and more resilient aspects of the social structure and considers the processes by which structures, including schemas, rules, norms and routines become established as authoritative guidelines for social behaviour”.

The origin of the institutional theory dates back to the origins of the social sciences. The contributors to this theory includes range of scholars including Karl Marx, Weber and Cooley.(Scott, 2004). This concept is embedded within the context of the new institutionalism. This examines the knowledge of the theory looking at institutions within the political system and the new role of government institutions (Terry, 1994).

The World Bank defines institution as “sets of formal and informal rules governing the actions of individuals and organizations and the interaction of participant in the development process” (World Bank, 2012).

Institutional theory emphasis the manner in which government and its systems work which includes legal powers, rules and procedures (Dibakwane, 2011). Public policy and institutions are closely inter-linked with regard to enforcement of rules. Policies are therefore implemented through institutions and for the benefit of the society. Government makes policies that must be adhered to by all citizens and both private and public organisations (Dye, 2005). Peters (2005) in his contribution to institutional theory emphasise that institutions created by government enforce the principles of legitimacy, universality and coercion. Therefore, government must create conducive policy

framework to allow institutional reform in passenger rail transport. When policy is certain, the institutions that are based upon it functions effectively.

Kumssa & Mbeche (2004) in contributing to institutional theory alludes to the role of institutions and development. Institutional reform is critical to have effective policies that will ensure sound governance systems for Africa's Development.

The institutions define the rules which are applicable to all members of society. The institutional mechanism enforces stability within the society and economic development (Kumssa & Mbeche, 2004). The strategic infrastructure investment of priority corridors will apply to economic activity which will be beneficial to the society. This will enhance the principle of structural institutionalism as a method of successful policy implementation.

Institutional theory with its principles provides the basis for assessing the institutional capacity to deliver on the National Passenger Rail Plan. It is in this context that the plan introduces institutional reform in the rail sector for the delivery of better commuter rail services. It strengthens the institutional mechanism and framework to deliver on passenger rail transport.

### 2.4.2 **New public management theory**

The New Public Management (NPM) theory emerged in the late 1970s to early 1980s. These was firstly embraced by the western powers such as the United Kingdom, United States and later by New Zealand and Australia. This new way of public administration was later adopted worldwide including third world and African Countries. This was seen as a new revolt of defying the traditional public administration tenets. This was seen as a replacement of the classic and the neoclassic public administration. The approach emanated from the public-choice theory as a rival followed by other approaches which gave birth to the new public management theory (Gruening, 2001).

This new theory was conceptualised with the context of public sector reforms and it was characterised by principles such as market driven competition, effective service delivery models and client orientation. The model of NPM borrowed private sector initiatives and methods to adopt them to develop a professional public service. This was geared

towards solving some of the structural governance issues among the countries (Haque, 1996).

One of the key objectives of the NPM was to introduce more practical and efficient methods of rendering services and ensure that governments performance levels meet the required standards. NPM was conceptualised to respond to the challenges of the traditional public administration such as ballooned public sectors, and globalisation of the economy in order to introduce competition, furthermore to counter the effects of mismanagement, corruption and the need to deliver high quality goods and services as demanded by citizens (Eshan & Naz, 2003).

Gumede (2010) defines New Public Management "as a term adopted by academics and later by governments and supra-government organizations in the 1980s and increasingly in the 1990s to describe public management reforms". It surfaced in the public sector in order to increase efficiency within the governing system (Hood, 1991). Peters (2011) in his literature of new public management emphasise the role of government in setting a policy framework and engage other actors as agents of service delivery. Market in this instance will be contributing to the gains of democracy.

Jean-Claude (2002) within the context of public management defines "public administration as a specific domain defined by the concrete political bodies and administrative structures which are governing public affairs, constitutions, organograms" Massey support the concept of public administration because the political and social measures and patterns of countries (Massey, 2009).

The New Public Management was based on seven principles which included borrowing the practices of private sector by the government to improve performance in the delivery of services. Another aspect was a professional public service with sound management principles (Hood, 1991).

The New Public Management was practiced in both developed and developing countries, but it had its shortfalls. It was not complementary because it wanted to transform public sector to private sector principles without due consideration in the public sector dynamics (Ferlie, 1996).

New Public Management is a relevant theoretical framework which will contribute to the study as it is based on the principle of the public and private sector playing critical roles towards service provision in the society. Private sector principles and systems will be adopted in sector reforms to embrace accountability. Any mechanism put in place must be able to monitor the implementation of programs in the rail plan to be executed by PRASA.

## 2.5 **CONCLUSION**

The literature on rail reforms across the globe was essential and will provide the basis for this study. The implementation of the National Passenger Rail Plan in South Africa cannot be implemented in isolation without considering the challenges from other jurisdictions. The literature is aligned with the purpose of the study in order to help to unravel the implementation of the rail plan, with the purpose of improving passenger rail in South Africa.

# CHAPTER THREE

## 3.1 RESEARCH METHODOLOGY

This chapter deals with the research methodology to be employed in analysing National Passenger Rail Plan implementation in South Africa. Both qualitative and quantitative methods will be explored in this study. Quantitative approach to research is based on post positivist in the process of understanding the issues at hand using predetermined variables (Creswell, 2003 and Neuman, 2011). The qualitative research approach is based on constructivist perspectives. In developing the knowledge the researcher develops themes as the details of the advantages of how the researcher understands the phenomena being studied (Leedy, 2005' Creswell, 2003 and Neuman,2011).

Mixed methodology is when the research study combines the quantitative and qualitative methods (Bryman, 2012 and Tashakkori & Teddlie, 2003). In collecting data the research considers both numbers to determine variables and information from interviews (Creswell, 2003). The mixed methods will assist the researcher in the discovery of all critical issues in passenger rail.

## 3.2 QUALITATIVE RESEARCH

Qualitative research is based on the principles of social science. It is a method that applies in words rather than numbers in understanding the subject matter (Bryman, 2012).

Creswell (2003) advances the argument that qualitative research is practical in nature as it takes place close to the participants in the process of conducting the research. That makes it possible for the researcher to gain deeper understanding of the subject matter due to the actual experiences of the participants involved in the research process. Marvastic (2004) argues that the qualitative research brings broad description and insights of the participant's interest on the subject matter.

Qualitative research is exploratory than fixed. Often different forms of information emerge during the process of research which gives the research an opportunity to refine the approach (Creswell, 2003). Another critical aspect of this research method is that it

is interpretive in nature, it allows the researcher an opportunity to interpret the data therefore making interpretation and conclusion on the value of the study due to lessons learned.

## 3.3 **QUANTITATIVE RESEARCH**

Creswell (2003) defines quantitative research as a method that examines relationship amongst variables and tends to explore the subject matter through surveys and experiments. This method uses numbers and statistical analysis as the basis. Neuman (2011) define quantitative as a method with distinct variables and rely on data using numbers from precise measurements. Dawson (2002) presents that quantitative research produce numbers and its applicable in big environment through surveys and the researcher use structured interview as a method of data collection.

In this study more focus will be on applying the qualitative research in exploring the implementation of the National Passenger Rail Plan. The data used will be literature from other countries that has embarked on railway reforms. Secondly looking at data on variables such as track related improvement, station upgrades initiatives , signalling rollout and capacity of implementing the Rail Plan. This will be presented using graphs. This study will be more focused on qualitative research than quantitative research.

## 3.4 **DATA COLLECTION**

The data collection methods to be used in the study will include interviews and documentary analysis.

### 3.4.1 **Interviews**

The interview is defined as an “inter subjective enterprise of two persons talking about common themes of interest (Kvale, 1996,). The researcher gets the opportunity to engage directly with his respondent during interviews. One of the advantage is that the sample’s response are normally those that are relevant to the subject matter and will positively contribute to the research questions of the study (Creswell, 2003 and Neuman, 2011). The interview provides an opportunity to get important information which covers a number of areas such as facts and opinions and beliefs of participant on

the subject matter (Leedy, 2005). Bryman (2012) states that in qualitative interviewing the researcher is interested in the interviewee' views on the subject matter.

For the purpose of the study the researcher use a semi-structured interview as described by Bryman(2012). A list of questions which relates to the research questions will be developed. The questions will be posed in a similar chronological order across all interviewee. What of interest is the interviewee point of view in dealing with in contributing to the research questions? The interview process should not be rigid and following up different leads is important to the process in establishing facts.

Leedy (2005) allude to guidelines of conducting an interview that will yield positive results. That includes preparing questions before interview, making sure that participants understand the issues regarding the key thrust of the National Passenger Rail Plan and explanation of the dynamics of the study to the interviewee and what one seeks to achieve.

The researcher applied a sampling technique of purposeful sampling. The participants who were interviewed had a thorough knowledge of the passenger rail sector. The sample covers participants from the passenger rail sector which is inclusive of Government, State Owned Enterprises, Industry Experts. Some of the participants were involved in drafting and implementation of the National Passenger Rail Plan of 2006.

### 3.4.2 **Documentary Analysis**

Documentary analysis is defined as methods to reconstruct the information differently as it relates to the issue being researched (Neuman, 2011). Documentary analysis is critical in the research process as it is able to track how a concept or emerging issues over the years are related to the study. It further able to demonstrate how the phenomena have manifested itself (Dibakwane, 2011) .

As part of the study, a researcher will conduct a documentary analysis of all document related to the passenger rail planning. That will include government documents inclusive of strategies and legislation, reports from operators and research reports of passenger rail performance and reforms initiatives across the globe.

## 3.5 DATA ANALYSIS AND PRESENTATION

The first step of data analysis will be for the researcher to go through the interviews in detail in order to transcript the major themes. Leedy (2005) frame data analysis within the qualitative research with grounded theory. Coding being one of the techniques will be used by the study to analyse the data collected. The themes that will be coming out of the findings would be used as the basis to organise data. Coding helps to review all data collected and label it correctly (Bryman, 2012).

### 3.5.1 Open Coding

Patton and Cochran (2002) define open coding as a process of analysing data in order to identify the themes. According to Neuman (2011) open coding happens at first level when data has just been collected. In this process the researcher identifies themes and labels the information into codes. This will assist the researcher in organising massive information into useful chunks, yet sensible. In the process of analysis, new themes can emerge which will change initial codes. Open coding is able to unearth themes deep inside the data.

### 3.5.2 Axial Coding

Neuman (2011) defines axial coding as “second stage of qualitative data in which a researcher organise the codes, links them and discovers key analytic categories”. In this stage of data analysis themes are consolidated at different levels, where you create concepts on the subject matter studied. Those concepts which have a direct relationship are grouped together. Patton and Cochran (2002) identify axial coding as a process that is involving and identify the relationships among the open codes.

Creswell (2003) states that beyond the themes, the researchers during qualitative research will able to construct different layers of themes. This assists the research to develop a storyline.

## 3.6 DATA VALIDATION

According to Creswell (2003) validation of data is an important task throughout all the stages of the research process. It assists in the accuracy of the findings from all those

involved in the process. There are ways to determine validity of data such as authenticity, goodness, adequacy, trustworthiness and credibility (Creswell and Miller, 2001).

Creswell (2003) describes various strategies for promoting validity and reliability of data during the research process. They include triangulation, member checks, peer review examination, researchers' position, adequate engagement in data collection, maximum variation, audit rail and rich, thick description. For the purpose of this research triangulation and peer review will be used. In triangulation different sources of data, using different searching engines will be used to understand the themes and the findings of the research. Peer review will be conducted with colleagues from the Department of Transport and PRASA on the findings based on their experiences in the passenger rail sector.

## 3.7 **ETHICAL CONSIDERATIONS**

Creswell (2003) identifies ethical issues that arise during the various process of the research study. Many professional associations all over the world have developed ethics code in different fields such as the American Psychological Association's Ethical Principles of Psychologists and Code of Conduct.

In defining a research problem, consideration should be taken that the study undertaken will be beneficial to the society and specifically the participants involved. Adhering to the ethnical norms during the data collection process gives credibility to the study. The participants to be interviewed in this study will be briefed of the nature of the research, what it seeks to achieve and how it may impact them in their different fields of work. Participants will be interviewed at suitable times within the schedule to undertake the research. Creswell (2003) states that it is critical for the research to develop an informed research consent form to the participants. In adhering to that in this study participants will be guaranteed confidentiality with regard to their responses. This will either be done verbally or written depending on the preference of the participants.

## 3.8 **LIMITATIONS OF THE STUDY**

The data collection methods will be done through interviews and will be limited to passenger rail experts with the sector and secondly the targeted regions of Tshwane and Wits regions within Gauteng Province. This will exclude the regions from other provinces where priority corridors have been identified such as Cape Town and the strategies which have been implemented. The exclusion might let the study miss the critical lessons learned in the implementation of National Passenger rail programmes in other regions in South Africa.

## 3.9 **CONCLUSION**

National Passenger Rail Plan strategy of implementing Priority Rail Corridors is a strategic intervention to revive passenger rail transport in the Republic. The strategic infrastructure investment projects to be implemented in the corridors will assist the country to address some socio-economic benefits such as creation of manufacturing plants for rolling stock which will create the much needed jobs. The methodology to be applied in the study with help to understand the factors that lead to the implementation challenges of the rail plan. It is with no doubt, that that the literature in this research will add to the body of knowledge to assist PRASA to deliver better on this national task.

# CHAPTER 4

# PRESENTATION OF THE RESULTS

## 4. INTRODUCTION

This Chapter presents the responses from the participants of the research study. The results will be presented in the sequence of the interview questions. The responses from each question will be presented in this section considering the sample that was used. The responses will be inclusive of officials from National Government, employees of State owned enterprises (SOE's) and Industry experts. The data presented attempts to provide answers on the primary research question to enquire about the shortcomings that create the implementation challenges of national passenger rail plan in South Africa. The data presentation further unpacks the secondary questions as it relates to the progress with regard to strategic infrastructure investments in priority corridors. Lastly the data presented deals with the strategies to be considered by PRASA and the Department of Transport to ensure successful implementation of the National Passenger Rail Plan.

Majority of the data presented in this chapter summarises the responses from the participant's in the interviews. The chapter concludes with the summary of the critical issues from the data that forms the thrust of the study.

### 4.1 **What are the shortcomings that create the implementation challenges of the National Passenger Rail Plan in South Africa.**

#### 4.1.1 **NATIONAL GOVERNMENT**

The officials interviewed were from the National Department of Transport. They indicated that the underlying factors include a number of critical issues which will be presented without any order. The Official from rail operations and oversight mentioned the lack of adequate funding or dedicated funding for the identified strategic infrastructure investments projects have delayed the implementation of the National Rail Plan. This view was supported by the official from the rail infrastructure division, who mentioned that this was demonstrated with regards to disparity in allocation of public

transport funding between road and rail. Both officials from the rail branch of the National Department of Transport mentioned the lack of skilled personnel and expertise at PRASA for the successful implementation of the modernisation process. The lack of skills relates to the planning capacity and the engineering skills to deal with the technical aspects of the program. The official from infrastructure division said that the lack of oversight by inefficient management during the implementation process was a serious concern. The other issues centre around integration of rail transport with other modes inclusive of densification and skewed spatial development. The official from the rail regulation division highlighted that institutional structure of PRASA should have been reviewed to align to the implementation of the Rail Plan. The official from the rail infrastructure mentioned that one of the shortcomings that created challenges can be attributed to the lack of the political will to implement the Rail Plan. Rail as the backbone of the transport was not prioritised with regard to funding as opposed to taxis and buses.

### 4.1.2 **STATE OWNED ENTERPRISES**

The employees who were part of the interviews from SOE's were involved in the implementation of National Rail Plan over years. Their response dealt with a number of issues which created the inability of the speedy implementation of the plan. Both officials from the Group Planning and Strategic asset management mentioned the funding to be able to implement the plan of that magnitude was not forthcoming, to prevent continuous bleeding in the Passenger Rail system. Another factor is the lack of skills and capacity to implement the capital programme. Strategic asset management official identified that personnel in PRASA did not have the knowledge to implement the massive infrastructure projects. Group planning official mentioned that there was a lack of project management structures to link the initiatives such as signalling upgrades, track related improvements and station upgrades. Rail operations officials identified proper planning by PRASA in the implementation of the Rail Plan was one of the factors that contributed to slow implementation.

The Railway Safety Regulator (RSR) pointed out that PRASA did not develop comprehensive business plans for each corridor. The focus shifted to modernisation as opposed to a focused corridor implementation focus. There was a misalignment

between the modernisation and corridor planning. The CEO of PRASA rail mentioned the timing of implementing the Rail Plan with a major institutional shift moving from SARCC - Metrorail into the PRASA group stable resulted into competing for resources. This was a mammoth task and the key focus was on building PRASA as an institution. As a result of that there was a lack of focus in implementing the National Rail Plan.

### 4.1.3 **INDUSTRY EXPERTS**

Responses from the industry experts dealt with the lack of focus on the operating model of PRASA. Rail operations expert expressed a view that PRASA is not structured correctly to respond to the rail market for an effective service provision. The PRASA headquarters is too big and more money was utilised to fund the human capital especially the management structure. The focus should be on Metrorail as an operating company to be equipped with high quality of technical skills to implement all critical projects. The rail engineer expert highlighted that the skills in the organisation must be able to match the implementation of the strategic infrastructure investment projects envisaged.

The transport economist identified that the commuter subsidy must be increased for a successful implementation of the National Rail Plan. The subsiding of commuter rail is a worldwide phenomenon. During the United Kingdom rail reforms, the commuter subsidy for the sustainable rail operations remained a focal point irrespective of its positive impact on ridership numbers. The Rail operations identified a lack of integration between PRASA, Metros and Provincial Department responsible for transport on the planning of passenger rail transport.

## 4.2 What is the progress with regard to strategic infrastructure investment in priority corridors.

### 4.2.1 NATIONAL GOVERNMENT

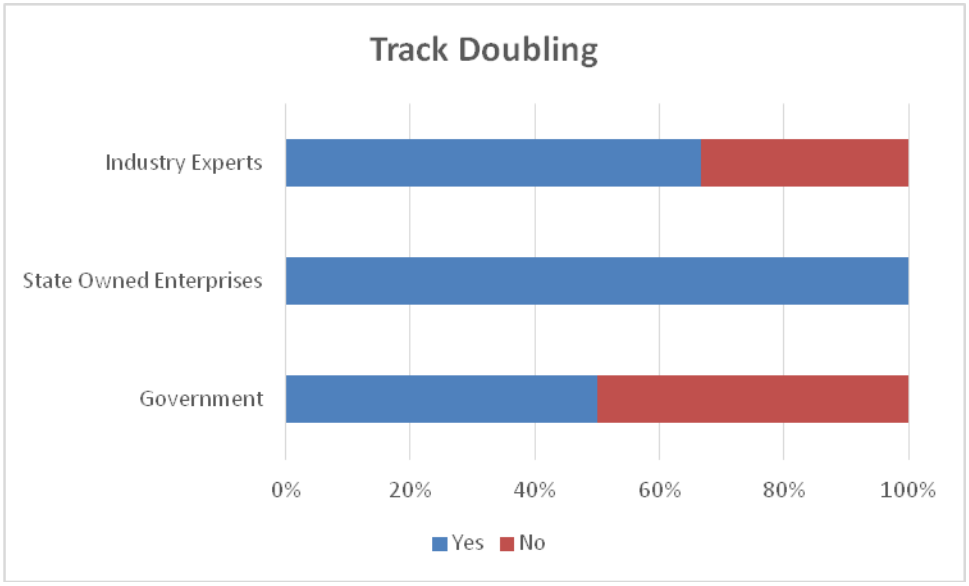



**Figure 1 Track Related Improvements**

*Source: Interview information and own analysis (2017)*

Responses from the National Government on the track related improvement revealed the following information:

**Track doubling:**

Figure 1 depicts that there was occurrence of track doubling as indicated by officials from the Rail Infrastructure and Rail operations. The Phenomenon that can be drawn from the above figure demonstrates that the implementation was slow in the beginning. However, track doubling did take place in the outer years of the National Rail Plan. They were still continuous speed restrictions on the network. This could not happen due to funding challenges.

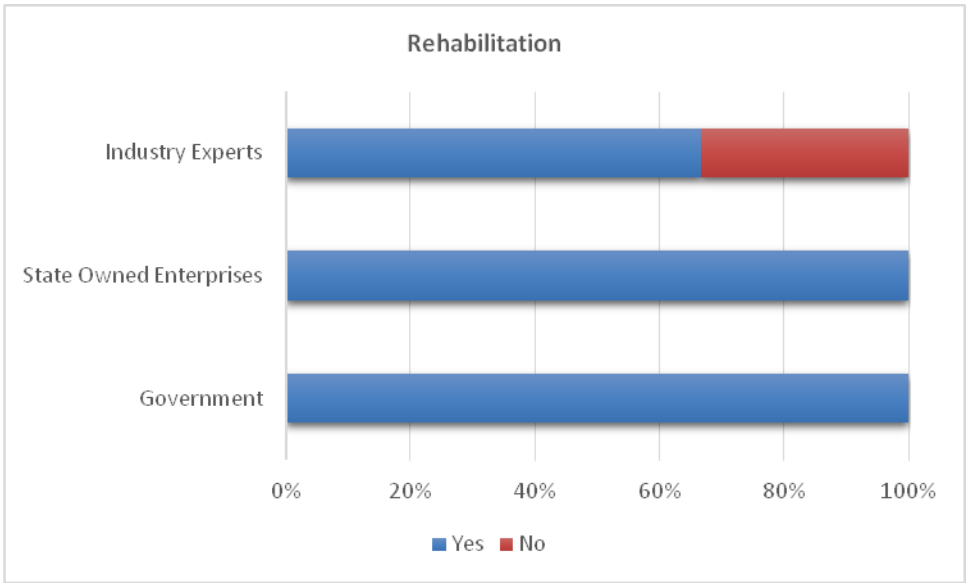



**Figure 2 Track Rehabilitation**

*Source: Interview information and own analysis (2017)*

**Track rehabilitation:**

It can be deduced from figure 2, that PRASA was successful in this aspect of the SIIP. Respondent Rail Regulation and Transport Economist agreed that almost about 65% was implemented. The phenomenon that can be drawn from the data presented is that lack of skills has affected track rehabilitation not to be achieved 100% in all categories.

**Construction of turning loops:**

This aspect of the strategic infrastructure investment project was not implemented. This is practical when an operator has enough rolling stock. It assists in headways from both origin and destination.

**Track side improvements:**

All respondents agreed that majority of track side improvements did take place approximately around 70%. This needed to happen to keep the railway system going. The aspects that were prioritised include perway and electrification.

The responses on electrical aspects of the strategic infrastructure projects included the following:

**Traction and transformer replacement:**

Some respondents based on the experience believe that this aspect was not achieved at all. Others responded argued that this aspect was done as part of the rolling stock refurbishment programme. The trains continuously brake few days after coming into the service. There is a view that Government did not get value for money. It showed that the traction motors were at the end of their life and Government should roll a new fleet programme as opposed to capitalized maintenance.

**Substation upgrades and replacement:**

According to the respondents this aspect did not happen.

**OHTE upgrading and replacement:**

This aspect of the infrastructure investment was rolled out by PRASA as part of refurbishment of the rolling stock. All respondents agree that roughly around 40% of the work was completed.

Station improvements initiatives consisted of the following:

**New stations:**

PRASA has made concerted effort on this one aspect of the strategic infrastructure projects however there is need to increase implementation momentum.. Two stations were built namely: Khayelitsa in Cape Town and Bridge City in Kwa-Zulu Natal.

**Station upgrades:**

There was significant progress in relation to this aspect with specific programme for station upgrades for different financial threshold. However various stations were overdesigned because of PRASA capacity constraints which led to over capitalisation of resources. There was poor oversight over project management consultants. One of the this programme success story was the NASREC Station build as part of realised during the 2010 soccer world cup preparation. PRASA transported majority of passengers into the soccer matches using the upgraded stations.

**Additional foot bridges:**

The aspect was not implemented because during the implementation phase it was realised that those were within the jurisdiction of the municipalities.

**CCTV Cameras:**

This programme was initially implemented to improve the security in around the stations but it later collapsed due to maintenance issues.

Signal upgrading elements of the strategic infrastructure included the following:

**New signal equipment:** This was not done and all respondents agreed that: There was manual signalling system which was maintained and replaced due to vandalism and theft. The challenge around the rail plan implementation was that PRASA did not address fencing as part of corridor implementation. The rail corridors were therefore exposed.

**Installation of signal backup systems**:

This aspect of the strategic infrastructure project did not happen since the priority was to have a modern signal system.

The commuter rail system did not receive adequate funding and the funding received was utilised for the entire network and not priority corridors as planned. It actually meant that the National Rail Plan was an unfunded mandate. Therefore, the investment ended up being diluted and without a significant and substantial impact.

Responses on the rolling stock included the following:

**Refurbishment and upgrades:**

Majority of the funding went to the rolling stock in order to stop the decline. The program on the rolling stock included a mixture of general overhauls and upgrades. This one aspect of the strategic infrastructure projects where PRASA hit 100% target. 800 coaches were out of service around 2008 and by 2010 the programme was fast-tracked and all the 800 coaches were back in service. The only challenge was that the trains keep on breaking which reduced the number of train sets to be used. The ultimate

question we must ask is whether Government received value for money or they should have invested in the new rolling stock then. In the outer years of the National Rail Plan Government finally secured R59 billion for the new rolling stock for the next 10 years.

### 4.2.2 **STATE OWNED ENTERPRISES**

The respondents when asked about progress on the strategic Infrastructure investment projects. In priority corridors have provided different views with regard to implementation challenges. This was based on the involvement in the various phases in the implementation of the National Rail Plan. On track related improvement the following were the responses:

**Track doubling** – all respondents agreed that a track doubling was part of the plan and a certain level of implementation took place. However, implementation, focused on areas where there was capacity constrains such as the line between Eerste Fabriek to Greenview Station in Mamelodi. In other areas the plan took long to implement. The challenge was on the project management aspects of the program. Contracting was not done well and some contractors did not perform as per the agreement. Some had to be fired and the process to reappoint had to start all over again.

**Track rehabilitation**– respondents has anonymously agreed that this aspect of the Strategic Infrastructure Investment Projects (SIIP) happened throughout the network. This is a continuous programme to check if the rail track is in good conditions, so as to continue running the commuter trains services. A 120km perway programme was implemented and a perway index was developed by PRASA to continuously track the investment.

**Construction of turning loops:**

The respondents have agreed this aspect of the SIIP did not happen and was realised during implementation. The commuter system had too much turning loops and crossovers. This had a huge impact on the travel time. Instead of constructing the new ones, some had to be eliminated. One of the responded argues that elimination was part of doing the work on the turning loops even through it was not as envisaged.

**Track side improvements:**

This aspect of the SIIP was done to the satisfaction of all respondents. It is a complementary maintenance to the system to be able to run trains effectively. Initiatives included signals maintenance of the track.

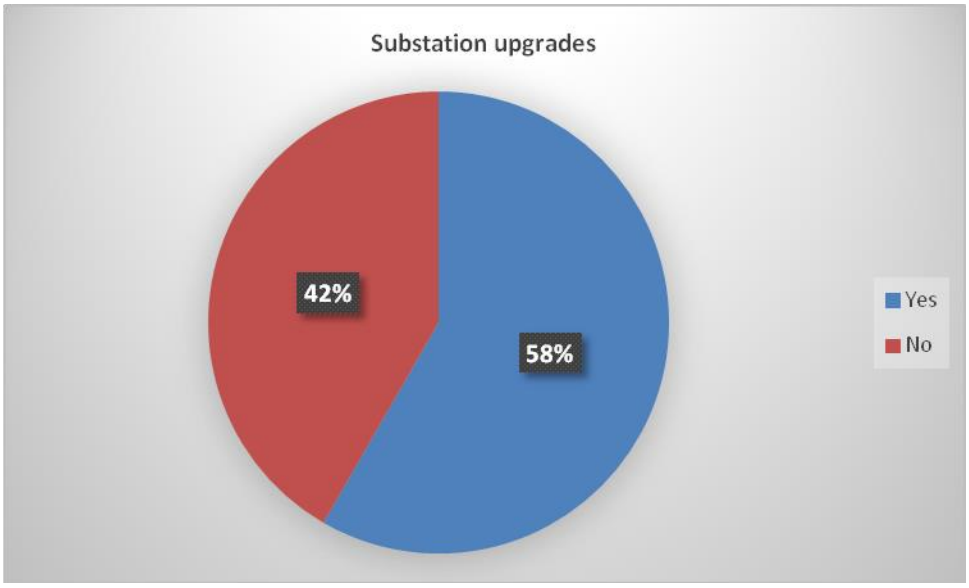



**Figure 3 Electrical Equipment**

*Source: Interview information and own analysis (2017)*

Responses on electrical aspects included the following:

As indicated in figure: 3 the respondents from State Owned Enterprises and National Government agree a sizeable implementation did take place as opposed to Industry Experts who are not satisfied with the progress. This is demonstrated by 58% of the respondents who have responded positively with regard to the substation upgrades.

**Traction and transformer replacement:**

This aspect did happen with the slow progress. The transformers in the system were old and rail capacity was lost in the process.

**Substation upgrades and replacement:**

All respondents agreed that this was done which eliminated old system that are negatively affected by bad weather conditions resulting into the substations power

failures. PRASA developed a substation rehabilitation programme in Gauteng with a specific focus on Braamfontein and Germiston.

**OHTE upgrading and replacement:**

Upgrading and replacement did happen even though it is at piecemeal. This programme entailed the alignment of the voltage and traction on the network.

All respondents agreed that station improvement is an area where there has been significant improvement in different programmes developed to address these areas.

**New Stations:**

The stations were planned but due to financial constrains they were not realised in the short term. Stations such as Greenveiw Station was build and is in the process of being completed.

**Station Upgrades.**

This was done through the National Station upgrade programme. This was focused on infrastructure upgrades that amounted between R20m to R30m. The other programme was the National Station improvement programme which looked at cosmetics within the R5m to R10m financial thresholds.

**Additional footbridge, ticketing office and CCTV cameras:**

The aspects were completed as part of the station modernisation. This introduced new technology of speed gates. In Gauteng Province the implementation was completed at Tembisa, Leralla and Pretoria Station. Two different divisions in PRASA namely: PRASA Rail and PRASA technical were responsible for implementing different programme under the umbrella of this aspects thus created unintended challenges. There was poor communication amongst them which led to the duplication of resources.

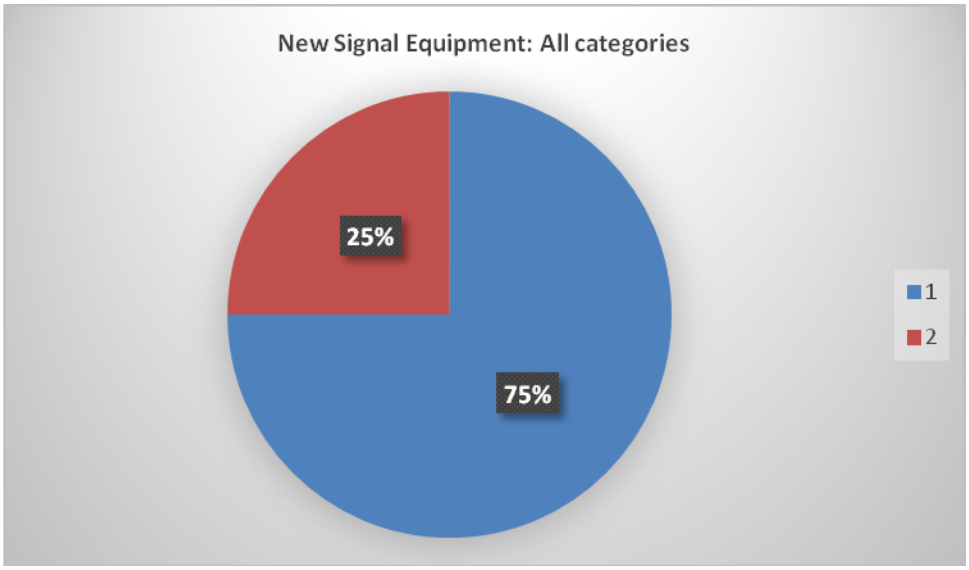



**Figure 4 Signal Equipment**

*Source: Interview information and own analysis (2017)*

Responses on signal upgrading included the following:

**New signal equipment:**

Fiqure 4 depict that this SIIP PRASA has performed very well in terms of implementation. Pattern of success is shown in 75% of the respondents who agree this was achieved. To support the data in figure 4 a five years signalling programme was developed in the initial stage of the National Rail Plan, but the implementation has been slow due to capacity and financial challenges. Gauteng has 24 signal cabins which possess a safety challenges in the system and has been the cause of major train accidents. They have been some progress with regard to consolidation, Tshwane control Centre is already integrated and an operator is able to view all trains on the network from one Centre. Kaalfontein and Midway are already integrated and will be controlled at the Gauteng nerve Centre in the near future. The new control Centre in Kaalfontein is seen as a big achievement even though it took longer to be built. There were procurement delays in appointing the relevant capacity.

**Installation of signal backup systems:**

This aspect of the SIIP did not happen because the focus was the overhaul of the signalling systems as a whole.

Responses on the rolling stock included the following:

**Refurbishment and upgrades**.

All respondents agreed that this completed as planned to arrest the decline and stop the system from bleeding. Majority of funding went into this aspect but it necessary to justify the investment return for some of refurbishment and value of money need to be derived. With regard to metro rail coaches by 2010/11 financial year 535 coaches were delivered at the cost of R2.3bn, 2011/12 510 coaches at R276bn and 2012/13 579 coaches at R2.7bn. This showed the success of the programme and targets were met in every year.

**New rolling stock.**

This aspect of the SIIP was not implemented due to funding challenges. Recently PRASA received funding from National Treasury to the tune of R57billion rand to fund the new rolling stock. A contract has been signed with Alstorm which is the biggest rolling stock order worldwide.

### 4.2.3 **INDUSTRY EXPERTS**

The industry experts interviewed with regard to the SIIP to be implemented in priority were from different back ground with regard to the involvement in railways. The area of their expertise ranged from rail engineering to transport economics. The experts are not involved into day to day implementation but rather on projects basis.

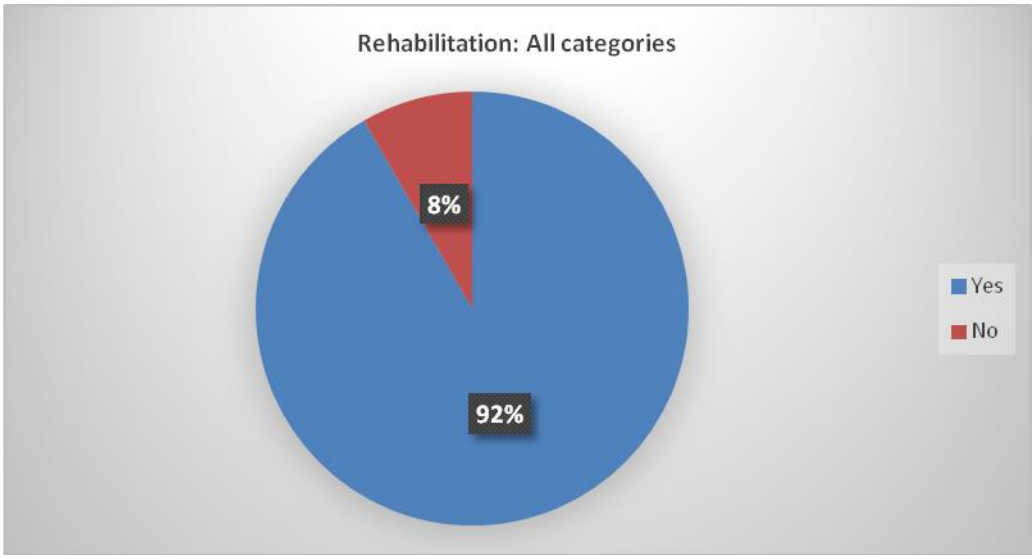



**Figure 5 Track Rehabilitation**

*Source: Interview information and own analysis (2017)*

Responses on the track related improvements from industry experts included the following:

**Track doubling:**

The rail engineer and rail operations respondent agreed that this aspect of the SIIP has been partly implemented, even though according to them it happened in the later part of the implementation of the National Rail Plan.

**Track Rehabilitation:**

As observed in figure 5 above the Rail Engineer agrees with the Rail Infrastructure official that success was demonstrated on this aspect. The same sentiment was observed from SOE's respondents. The Transport Economist believes that rehabilitation efforts must be directed to the market one serves while the same opinion cannot be said about PRASA. The transport economist feel PRASA does not understand all the dynamics in the market they are serving.

**Construction of turning loops:**

This aspect was not implemented because the priority was on the rail track. The respondents have recommended that the redundant turn offs be removed because it might impede services on the new trains.

**Track side improvements:**

This was implemented to ensure that system is maintained and commuter trains are effectively run.

Responses on the electrical aspects of strategic infrastructure investment project reflected the issues outlined below:

On these aspects the respondents acknowledge that they were not directly involved in the implementation but relied on the knowledge of the sector.

**Traction and transformer replacement:**

Two of the respondents mentioned that with regard to their experience in the sector this aspect has not being realised. One respondent confirmed that implementation was on small scale

**Substation upgrades and replacements:**

This aspect did not happen.

**OHTE upgrading and replacement:**

Two of the respondents said in their own experience this did not take place while one of the respondents have realised some improvements in the projects he was involved in.

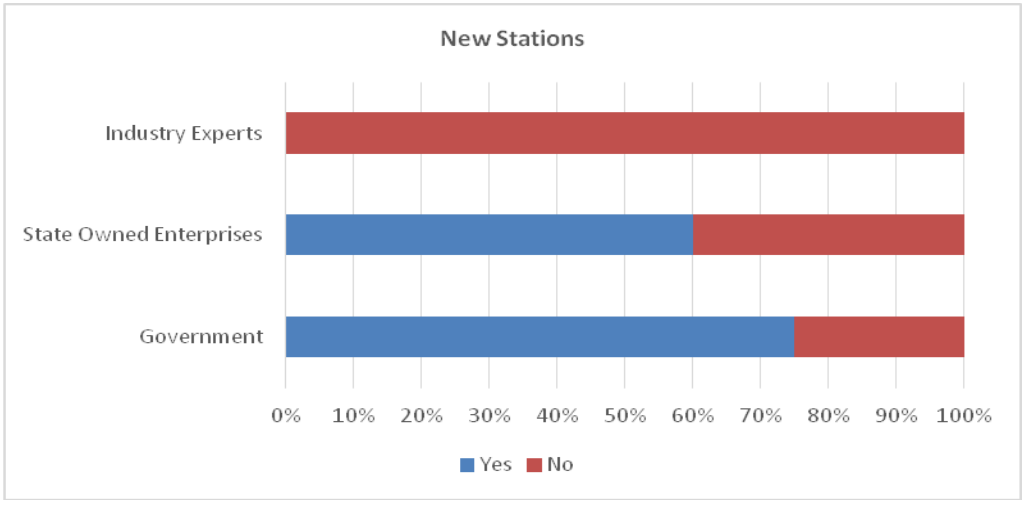



**Figure 6 Stations**

*Source: Interview information and own analysis (2017)*

Responses on station improvements revealed the following:

**New Stations:**

As depicted in figure 6 above the new stations were not build immediately due to insufficient funding. Industry experts believe that the programme implementation started at a slow pace and later gained momentum in anticipation of 2010 world cup. However, around 2010 there was noticeable progress as deduced from the Government and SOE's response.

**Station upgrades:**

Two programmes were designed in this regard by PRASA namely: the National Station improvement programme and the National Station upgrade programme.

**Additional footbridges, ticketing, office and CCTV cameras.**

This additional injection to the infrastructure were implemented as part of the station modernisation programme.

Responses on signal upgrades included the following:

**New signal equipment:**

The respondents agreed that a lot of effort was put in the integration of the signal systems in Gauteng. This is critical in order to reduce a number of collisions on the network and for easy train authorisation.

**Installation of signal backup systems:**

This aspect of the SIIP was not implemented because the focus was to overhaul the train signal systems in totality.

Responses on the rolling stock revealed the following:

**Refurbishment and upgrades:**

This is one aspect of the SIIP where all the respondents believe that more effort was put for the country to continue to have a commuter system. The question from the industry

expects is where it was wise to pump billions in the rolling stock that was beyond its lifespan or the country should have resolved to invest immediately.

**New rolling stock:**

This was not realised due to funding challenges. The country has now secured funds to invest in the new commuter rail fleet, what remains a challenge is for the PRASA to ensure that there is a maintenance contract in place to service the new fleet. Secondly Government must increase the operating subsidy to acceptable levels considering that commuter rail is subsidised worldwide.

## 4.3 What are the strategies to be considered by the Department of Transport and PRASA for the successful implementation of the National Passenger Rail Plan.

### 4.3.1 NATIONAL GOVERNMENT

The responses of Rail Regulation official were that DOT as the custodian of policy must address the institutional structure for passenger rail in the country and with specific focus to PRASA. This will ensure that PRASA plays its role within the National Transport task.

The key corridors identified in the National Rail Plan in which investment in infrastructure and rolling stock will deliver the return for investment must be prioritised as clearly articulated by the Rail Operations and Oversight official. These will ensure that there is focused implementation of the Rail Plan corridor approach. Both the Rail Infrastructure and Rail Safety Regulation officials have identified that the Department of Transport together with National Treasury must earmark funds for specific high impact interventions. Adequate reinforced funding is needed for the implementation of strategic projects in priority corridors.

PRASA should embark on the major skills development programme to increase its skill set especially in relation to capital projects as alluded by the Rail Infrastructure official. Focus should be put on technical skills such as Rail engineers and artisans which are core skills set for the rail business.

### 4.3.2 **STATE OWNED ENTERPRISES**

The responses from the state owned enterprises respondents alluded to the fact that the Rail Plan has articulated objectives that should be implemented. Strategic Asset Management official identified the need for a structured relationship between DOT and PRASA. The Railway Safety Regulator has expressed a view that, the DOT should provide oversight and ensure constant monitoring of the implementation. This was supported by Group Planning official that government must ensure that PRASA submits infrastructure plans and their implementation plans on the corridor approach. There is a need by the implementing entity to have a proper planning framework for the corridor approach.

Rail operations official mentioned that it is necessary to look at whether PRASA is structure correctly to rollout this programme. Government must provide a proper institutional framework for PRASA and DOT must provide policy direction on market structure as shared by CEO of Prasa Rail and the Railway Safety Regulator. There is a need for the introduction of vertical separation within the rail sector. The PRASA Rail CEO has a strong view that the ideal situation will be for the country to have a Railway Infrastructure Agency and PRASA can focus on rail operations as its core business.

The Strategic Asset Management official felt that even though the plan must be implemented, there is a need to revisit the corridors as initially designed. A number of factors might have changed since the National Rail Plan was developed, such as the number of passengers transported and railway capacity available etc.

The CEO of PRASA Rail mentioned that due to many years of under investment in the rail sector PRASA have lost critical skills over the years. Government must ensure PRASA has requisite technical skills. The view was supported by the Group Planning official who mentioned that will assist PRASA to have multiple capacitated teams to implement the corridors.

The officials from the Strategic Asset Management, Group Planning and Rail Operations mentioned the need for adequate funding to be unlocked for effective implementation of the Rail Plan. There is no operational budget within PRASA to cater for the operational aspect related to Rail Plan activities.

The official from Group Planning raised a view that the National Rail Plan was infrastructure driven and there is a need to elevate the operational element of the passenger rail in the country. Alignment of plans amongst rail operators such as PRASA, Gautrain and new entrants will be critical milestone in this regard.

### 4.3.3 **INDUSTRY EXPERTS**

Rail planning of railways must be taken up as a priority by the Department of Transport. A National planning unit must be established within the Department as mentioned by the Rail Engineer. The Rail Operations specialist holds the view of full integration of planning with Metros and Provinces to address high passenger movements. There is a need to plan and implement new PRASA rail corridors targeting strategic important modes in Gauteng, Western Cape and Kwa-Zulu Natal Provinces.

The Transport Economist subscribes to the view that Institutional change within PRASA is necessary to separate operations from the infrastructure. Lessons can be learnt from the Gautrain model. The essence of the model is that, you can provide a public service using the private sector and the case here being Bombela Operating Company(BOC). The view was further supported by the Rail Operations specialist. The issue that strengthen this arrangement is the concession agreement. The operator in a concession agreement has to perform according to the agreed target.

One of the responses from the Transport Economist went further to say that we don't have to reinvert the will. Guatrain Management Agency (GMA) is already doing a good job in managing the BOC concessions. The view was shared by the Rail Engineer that the GMA can become a Commuter Management Agency for South Africa to manage concessions including PRASA. Then PRASA can focus on operations. DOT need to reinforce the service level agreement with PRASA since it is not working.

One of the key element for effective railway systems worldwide is that, operating performance is linked to financial incentive. The Transport Economist view is that at PRASA government pumps in a lot of money in the system without defined and managed performance targets. One of the responses Rail Engineer mentioned that PRASA need to look carefully into their business and terminate the services which are operating at loss. Shosholoza Meyl which is PRASA long distance rail operations should

be closed down. The role that Shosholoza Meyl played can be done by Autopax which is subsidiary of PRASA. Autopax passenger services provides long distance road transport services and operates two buses services namely: Translux and City to City. Autopax services almost the same market as Shosholoza Meyl.

## 4.4 Strategic interventions to be considered for sustainable rail passenger operations for South Africa.

### 4.4.1 NATIONAL GOVERNMENT

The Rail Infrastructure official had a strong view that Government must urgently recognise the value of integrated public transport planning and identify the best modal solution tied to the lack of mobility. The modal solutions are currently determined by the availability of funds within a specific sphere of government. Bus Rapid Transit (BRT) is an example in this case. If rail must be the heartbeat of our mobility solutions, resources must be allocated to it and the view was supported by the official from Rail Regulation.

The Rail Operations and Oversight officials mentioned the need for integration of services to be rendered by trains, buses and taxis to have an integrated public transport network. There should be complemented initiatives such as integrated payment system wherein same ticket can be accepted across all modes of Transport for passenger rail system to be sustainable. PRASA must invest in strategies to ensure effective revenue collection; fair evasion in the rail corridors is very high and needs to be dealt with as was clearly stated by the Rail Safety Regulation official.

Worldwide effective practice is for the commuter rail being managed at Metropolitan level. Rail Operations and Oversight officials view is that Government must devolve commuter rail to the lowest sphere of government to ensure a better service provision.

Rail Infrastructure official hold the view that alignment between spatial planning and transport planning is required. This will help in the densification of urban areas to reverse the apartheid spatial planning. Government must provide funding for both below rail and above rail infrastructure assets since commuter rail is subsidized in other parts of the world as canvassed by the official from Rail Regulation. Commuter rail should be classified as a social service, furthermore one of the responses believe that

Government should consider permitting private sector to participate in commuter rail especially in metropolitan areas. Both officials from Rail Regulation and Rail Infrastructure support and argued that private sector will be able to effectively manage the risk. It is evident that Government purse cannot fund all the rail initiatives within reasonable period.

### 4.4.2 **STATE OWNED ENTERPRISES**

Both the Railway Safety Regulator and Strategic Asset Management response mentioned the need to include private sector involvement in commuter rail. This must assist with efficiency because the private sector work in an incentive structure. South Africa must liberalise the railways further and concessioning should be one of the key instruments to be used as stated by the Strategic Asset Management official.

The Group Planning official holds the view that the structure of PRASA must be regionalised rather than having a huge head office with a group structure. An introspection must be done to understand the core of the business and resources be allocated accordingly.

The implementation of the National Rail Plan moving forward must include issue of operations improvement as opposed to be only infrastructure focused as mentioned by the CEO PRASA Rail. Commuter Rail should be the backbone of the public transport system for the Country. The Group Planning Executive holds the view that Commuter Rail must therefore be modernised to improve the travel time with the rail system becoming efficient. Rail Transport must be of a fully integrated Transport network with feeder services being provided by other modes of Transport. PRASA must use travel demand management strategy to support Commuter Rail in the Metropolitan areas.

According to CEO PRASA Rail and Rail Operations the creation of Railway Infrastructure Agency for South Africa will foster sustainable rail operations in South Africa. That will separate operations from infrastructure investment. PRASA will therefore focus on moving commuters. CEO PRASA Rail mentioned that it is critical to ensure sustainability and focus on skills development. Due to many years of underinvestment PRASA has lost essential skills. The Railway Safety Regulator mentioned that the challenges of not having the right skills led to safety challenges in

the railway system. The PRASA Rail CEO supports this view and mentioned that this is worsened by the fact that there is no earmarked funding within the organisation to run this programme. The reality is that PRASA rail is always budgeting on a deficit which raises serious challenges about funding of the rail infrastructure.

### 4.4.3 **INDUSTRY EXPERTS**

According to the Rail Engineer, rail should be considered a primary commuter mode in metropolitan areas such as Gauteng, Cape Town and EThekwini. Demand modelling was done for Gauteng for 2025 and 2037 scenarios and the study has pointed that by 2037 there will be major road congestion and highways will be clocked and cars will be travelling at 15 kilometers an hour and they view was supported by the Rail Operations specialist.

The Transport Economist stressed the need to do whatever it takes to recover the market share which rail has lost over the years. As a Country for sustainable rail operations we need a competent management agency for commuter rail, that will ensure that services are delivered within a clear framework. Key is to create an institutional reform that will have an effective delivery model for the commuter rail services as mentioned by the Rail Operations specialist. Gautrain is a perfect example even though it is still at infancy stage. Furthermore, the challenge is not unique to South Africa. The Transport Economist illustrated the point by giving few examples. The Mexico rail concessions process was one case in point. Secondly the Bangkok public transport model is a perfect example of where public and private sector can provide the same service with the public transport arena.

## 4.5 **CONCLUSION**

This Chapter presented the findings of the research as guided by both primary and secondary research questions. The data presented was gathered during the interview process from the respondents which were role-players within the rail sector. The respondents highlighted the shortcomings that created implementation challenges in the national passenger rail with the dominant views touched on the funding dynamics and the appropriate manpower to deliver on the plan. On the progress with regard to the strategic projects in the priority corridors the respondents had different opinions. The

National Government and SOE'S had different level of understanding when it relates to track related improvements. The dynamic might be that different respondents have experienced the implementation of the National Rail Plan differently. With regard to the strategies for the successful implementation of the National Rail Plans the respondents from all three areas, shared common views with regard to the strategic interventions needed. The issues included funding, government involvement and the National rail policy framework. These issues were developed into themes which will be examined in details in the next chapter when analysing results.

# CHAPTER 5

# INTERPRETATION AND ANALYSIS

## 5. INTRODUCTION

This chapter is centred on the analysis and interpretation of the data presented in the previous chapter. Further interrogation of the data will draw parallel of the literature review on National Rail Plan implementation of various jurisdictions. Analysis of data will provide insight into the research questions as it relates to the implementation challenges of the National Passenger Rail Plan. The results of the study were analysed based on the responses from National Government officials, employees of SOE's and Industry experts. The answers which reflect on converging issues will be grouped together to form themes which will be discussed under each focal areas as outlined in the interview questions.

### 5.1 Shortcomings that create the implementation challenges of the National Passenger Rail Plan for South Africa

#### 5.1.1 Funding

Respondents from National Government, SOE's and Industry Experts have highlighted the importance of funding in the implementation of the National Rail Plan. Funding in this regard must be secured from the National Governments through the fiscus. Meyer and Meier (2011) support this finding in the literature with regard to the public funding being the pillar of the Swiss railway system. The reason why governments must invest in railways is because it is regarded as strategic asset for the country. Respondents agree that it became clear during the implementation that the National Rail Plan was a bold and well thought plan. But without dedicated and reinforced financial resources attached to it, will remain a dream. It is clearly articulated in the data presented that within the limited available financial resources, Rail was not prioritised as opposed to the Road mode. It has been demonstrated in the literature review that railway infrastructure comes at a heavy price tag. Senn and Cini (2001) argue that this

practice was evident in both Italy and Switzerland rail reforms. Different funding options will have to be explored.

The current funding capital expenditure programme for the MTEF is expected to be at R14.6 billion in 2016/17 and it will reach R16. 4 billion in 2018/19. Almost R7Million of this over the MTEF is allocated to the signalling and telecommunications programme (PRASA, 2016).

African Development Bank (2015) in its report for financing policy options for rail infrastructure in Africa alludes to funding options as a sustainable policy measure for railways in Africa. Instruments that Government needs to explore include but not limited to SOE's balance sheet, private partnerships agreement through concessions, fiscus and debt and equity funding.

### 5.1.2 **Lack of Capacity**

On the basis of the data presented across all respondents' lack of capacity in the implementation of the National Rail Plan have formed part of the golden thread. PRASA have 17 000 staff members that must continuously be skilled across all business units (PRASA, 2016) This has manifested itself through the lack of technical skills within PRASA as an implementing Agent of Government. Technical skills with regard to rail engineering, trains operations and infrastructure implementation were the key concerns. These has made it difficult to fast-track some of the key strategic infrastructure investment project with allocated funding. The personnel in PRASA did not have the exposure to implement huge infrastructure projects. This resulted from two issues; firstly, the country has spent number of years not investing in the rail infrastructure and secondly over the year's skills in the rail sector has been lost due to experienced rail engineers exiting the system due to retirement. Industry experts have expressed a concern of PRASA skills set not aligned to the critical areas of the organisation with regard to the implementation of strategic infrastructure investments projects. This problem of capacity and skills within the rail sector is dominant in the Sub-Saharan Africa. There is a need to encourage capacity building and rail training centres to target the top management and operations personnel (Africa Development Bank, 2015)

### 5.1.3 **Institutional structure**

The coherent institutional structure, that response to the overall needs of the commuters is necessary for the successful implementation of the National Rail Plan. All respondents shared a view that PRASA was not correctly structured to respond to the market. The literature has identified the institutional structure as a determining factor for in railways success and failures (World Bank, 2015) What have come out of the data is that it was imperative that during the National Rail Plan development a resource plan should have developed to look at the institutional mechanisms to support its implementation. African Development Bank (2015) holds a view that railway public sector bodies like PRASA should be corporatised. This view is shared by the industry experts who believes that a revised institutional structure will bring efficient and accountability in decision making.

### 5.1.4 **Lack of Leadership**

Success organisations across the globe whether public or private are led by competent leaders who provide a vision. In PRASA there was a lack of leadership to rally the organisation around the National Rail Plan. This view is supported by the World Bank (2015) in its analysis of creating successful railway companies whether public or private. It emphasises the management of railway companies must be appointed on merit and that ensure its accountability in achieving the set targets (World Bank, 2015). According to the respondent from the National Government there was inefficient management at the top structure of the organisation. There was an absence of project management structures to facilitate programme implementation on the strategic infrastructure investment projects as envisaged in the National Rail Plan. There was no proper corridor planning to thrash out implementation details and it was indicative of lack of visionary leadership in accomplishing the mandate of the organisation.

## 5.2 Progress with regard to the strategic infrastructure investment projects in priority corridors.

### 5.2.1 Track related improvements

The respondents from National Government and State Owned Enterprises all agrees that track related improvements have been implemented across the network at a noticeable slower pace. This was as a result of challenges around skills shortage and capacity within Metrorail. This aspect of the strategic investment infrastructure projects was necessary to sustain the commuter rail network. Track rehabilitation and track side improvements were top on the list as per the data presented in the previous chapter. All respondents agreed that it was not necessary to implement the construction of turning loops since it was not an immediate priority.

### 5.2.2 Electrical equipment

Traction and transformer replacement together with substation upgrades have a significant share of implementation. These could be due to the fact that implementing personnel were biased towards their competent areas when prioritising implementation priority list but without being conversant with the implementation dynamics. The issue that have being raised is whether government has realised the value for money. This observation was raised based on the fact that even though billions of rands were spend on this program the trains kept on being taken out of the service. OHTE upgrades were implemented in piecemeal due to capacity constraints in the organisation.

### 5.2.3 Station improvements

National Governments, SOE’s and industry experts all agree this aspect was fully implemented in most priority corridors. New stations were built around 2010 as part of the new face of railways. A case in point is the Bridge City rail link was launched in 2013 by his Excellency President Zuma. This initiative has come up with a concept where land around stations is utilised for residential areas and commercial use. This will in future make train stations to be at the centre of

economic development. This concept is being explored in the developed countries, predominantly European countries were station upgrades have been implemented.

### 5.2.4 **Signal upgrading**

All the respondents believed this was necessary to be implemented in priority corridors. PRASA developed a five year signalling programme. The signal manual systems will be faced out as part of the process. Integration of the systems was of outmost importance and that has beared fruits as evident in the integration of Tshwane Control Centre. Considering the years of under investment signalling system had to be prioritised. The programme implementation was delayed due to capacity constraints and procurement challenges. The Kaalfontein Control Centre which is part of the five years signalling programme has been completed. Already an integration of some manual system from Kaalfontein and Midway has taken place. This demonstrate the level at which the programme has received the priority it deserves. PRASA has spent around billions of rands on the signalling programme. All respondents agree that the installation of signal backup system was not implemented as an independent process, but part of an overhaul of the signalling system for the countrywide railway system.

### 5.2.5 **Rolling stock**

Looking at the data presented on the rolling stock programme it was apparent that more efforts concentrated on resuscitating the commuter system. Both participants from the National Government and SOE's acknowledged that in this aspect PRASA did hit their target. Refurbishment and upgrade of the existing network was necessary for providing the commuter rail service. Between 2011 and 2013 around R300bn was spent on the refurbishment programme. Majority of coaches that were out of service at the development of the National Rail Plan was brought back into service to alleviate pressure at the peak times. The concern that all who participated in the study have, is whether that was an effective strategic decision. This was because the coaches were continuously

breaking down within few days of being brought back into service. Secondly it does not assist much to maintain assets which are beyond their lifespan. That does not give much in terms of performance. A decision should have been taken by then to engage immediately in a process of buying a new rolling stock. Government through the fiscus have recently secured funding to the tune of R57bn for the new commuter rolling stock for a period of ten years.

## 5.3 What are the strategies to be considered by the DoT and PRASA to ensure successful implementation of the National Passenger Rail Plan.

### 5.3.1 Government Involvement

National Government, State Owned Enterprises and Industry Experts agree that government active involvement in railways is important. Government must be involved in the railways as a custodian of public interest. Government involvement will ensure that train services are efficiently affordable, safe and offer an appropriate quality service to the citizens. (World Bank, 2015). A strong oversight role must be provided by Government to PRASA. The oversight functions should be capacitated so that it defines the rules of engagement. This view is supported by Japanese government active role the played in the railway reform for better service provision (Senn and Cini, 2011). A service level agreement between the department and PRASA should be carefully drafted and monitored by the Department of Transport. The Department of Transport should establish the National Rail Planning function to provide a roadmap for strategic corridors in the country and where investment must take place. Lastly government must create an enabling regulatory framework for the safety and economic issues.

### 5.3.2 National Rail Policy Framework

All respondents agree that a clear policy framework is needed for the successful implementation of the Rail Plan. The policy framework will provide a vision for passenger/commuter rail for South Africa. Government cannot neglect its responsibility of providing a policy basis of how railways should run in the country. This view demonstrated in the literature where government must provide

legal and regulatory framework in their railways (World Bank, 2015). The absence of policy framework affects national decision making and let State Owned Enterprises defining the policy paradigm and self-regulation. The policy framework will amongst other things provide clarity on market structure, and set the regulatory regime in providing subsidy mechanism. The framework will also allude to the centralisation of National Rail Planning within National Government.

### 5.3.3 **Corridor Planning**

An understanding is shared across by all respondents the corridor planning dynamics should be reviewed. The National Rail Plan has at a high level engage in a transport corridor planning exercise with all stakeholders to identify the priority corridors (SARCC 2006). The data presented shows that at an implementation level a detailed corridor plans were not drafted by metrorail as an implementing agent. Corridor planning must be developed for precisely two reasons; Firstly, it will assist in understanding the detailed financial resources needed to engage in focused implementation which will result in high impact interventions. Secondly this process will analyse whether the initial factors considered in determining corridors haven't changed from the initial Rail Plan factors such as the passenger numbers, Rail infrastructure and Rail capacity which can change over time. PRASA must develop infrastructure plans per corridor identified.

### 5.3.4 **Passenger Rail Industry Structure**

The data presented indicates that for the successful implementation of the National Rail Plan there is a need to review the passenger rail industry structure. This view is aligned to the findings of the World Bank on the industry structure. Railways in the world have inherited industry structures from the past but depending on the plan to be implemented a review is always necessary (World Bank, 2012). The respondents from the SOE's argued that the vertical separation industry structure is the answer, where there is separate infrastructure from the operations. The view is that PRASA should be responsible for operational element of the corridor strategy. This is one of the industry structures that were

introduced by the United Kingdom in the 1990's during the privatisation process of their railways. But this was later revisited in the after years due to Hatfield Rail accident. The other dimension of vertical separation is that the infrastructure manager maintains the infrastructure to acceptable standards for effective operations. Another industry structure to consider is the Gautrain Model where on vertical integration is introduced with the management agency to oversee the rail concessions agreement in managing countrywide commuter networking.

## 5.4 Strategic interventions to be considered for sustainable Rail Passenger Operations in South Africa.

### 5.4.1 Private sector participation

The private sector involvements in the railways are viewed by the respondent as one of the strategic interventions for a sustainable commuter system in the country. However, the respondents have emphasised the issue of the infrastructure ownership as strategic assets and must remain in the hands of Government. Private sector can be involved in a number of ways. Firstly, by providing loans as a funding model of infrastructure. Secondly; by entering into concession agreements such as built operate and transfer. Thirdly; private sector can run vertically intergraded operations on routes that government does not see the appetite of operating. This will introduce competition among operators with defined guidelines on the access arrangement. Private sector participation in this instance will assist the government in the effective implementation of priority corridors strategy and secondly unlock the funding dilemma that government is experiencing (DOT, 2015). This model has worked in other jurisdiction such as the Russian federation, USA and the European Union community as demonstrated in the literature. Gautrain concession between BOC and GMA is working as a perfect example for South Africa on how private sector can deliver an efficient rail service (Marsay, 2011).

### 5.4.2 Devolution of commuter Rail

Both National Government, and Industry Experts believe that the reason it has taken long for the National Rail Plan to be implemented might be that it is

implemented at wrong level. Commuter rail worldwide is managed at the metropolitan level. This makes it easier to be planned as part of the transport plans. The industry experts mentioned that the National Land Transport Act of 2009, National Development Plan and the National Rail Policy Green Paper alludes the devolution. What is surprising is why Government is not implementing their own policy and legislative framework. The other advantages of this is that the metros will contract rail services with a clear service level agreement with the operator, undertake long-term planning based on the local dynamics and population growth. Lastly this will assist the municipalities to give railways priority in the budgeting process like any other modes of transport. It became clear that PRASA is implementing this at a high level and when the beneficiaries are in the regions.

## 5.5 **CONCLUSION**

This chapter provided an analysis of findings and its relationship with the research question. It provided further understanding of the challenges in the implementation of the National Passenger Rail Plan. Key themes identified as part of implementation dynamics included funding, lack of capacity, institutional structure and lack of leadership. The analysis directed government to get the basics right including determining its strategic involvement in railway and providing of a policy framework. In the final analysis the factors for sustainable rail operations for South Africa are identified amongst others as private sector participation and devolution of rail to the right sphere of government.

# CHAPTER 6

## 6. CONCLUSION AND RECOMMENDATIONS

### 6.1. INTRODUCTION

This chapter presents the conclusions and recommendations of the study. As it was clearly stated in the problem statement, it was the intention of the researcher to understand the implementation challenges regarding the National Rail Plan of 2006 as approved by the Cabinet of South Africa. The National Rail Plan was a blue print to revive the commuter rail in South Africa. Its importance cannot be overstated as this is mode of public transport that is used by the poorest members of the society.

As outlined in the purpose of the study it was critical to engage with the relevant players within the railways space to gain further understanding of the research questions. Participants from the Government, State Owned Enterprises and Industry Experts provided their experience and insights to enrich the study.

The chapter provides conclusions to the study in highlighting the challenges that have surfaced during implementation of the National Rail Plan. In the final part, the chapter will provide both recommendations for the implementation of the National Rail Plan. Lessons learned in the process will shape future implementation strategies.

### 6.2. CONCLUSION OF THE STUDY

The data that was presented in the previous chapter has laid the basis for the key themes that has emanated from this study. Based on the findings generated by the study, the decline of the country railways and challenges phased in the implementation of massive rail plans is not unique to South Africa. The findings of the study are similar to some challenges faced in other jurisdictions as stated in the literature. The conclusion of the study is centred around funding, lack of capacity and skills, lack of leadership and the absence of the National Rail Policy Framework.

Funding is central to any programme implementation. The difficulty of securing funds for the implementation of the National Rail Plan points to a systematic challenge. Government should in developing their plans, make sure there is a thoroughly cost-based analysis to determine the affordability. The findings of the study demonstrated that the National Rail Plan was developed first and the scrabble of the resources followed later. This is the reason why its implementation was delayed in the strategic infrastructure investment projects. It is demonstrated in the implementation of rail reform in other countries such as Switzerland, and Japan, that the government have secured funds for implementation of massive infrastructure projects.

Lack of capacity and skills according to the findings of the study was one of the stumbling blocks in the implementation of the National Rail Plan. Introducing any major rail reform, Government and PRASA should have made sure they have the skills set to implement the plan. The lack of capacity within PRASA was evident in areas such as rail engineering, contract management procurement and planning. These skills are very important in meeting the delivery timeframes of any projects. With the absence of detailed infrastructure plan for each priority corridor the National Rail Plan was doomed to failure. Delay in the procurement of services affect the deadline of projects and these should have been addressed during the planning phase.

Ineffective of leadership within PRASA according to the findings of the study, contributed to the slow implementation of the National Rail Plan. Organisation design in developing the structure of the organisation should be driven by the core mandate of the organisation. An observation that PRASA organogram is skewed towards head office at the expense of Regions, where rail operations happen is of great concern. The absence of project management structures and dedicated teams to radically implement the National Rail Plan was a reflection on ineffective organisational design at PRASA. Hood (1991) within the ambit of public management theory alludes to a professional public service with well-grounded management principles and ethics. This was not the case with PRASA on the implementation of the National Rail Plan.

The absence of a National Rail Policy within the sector has created a vacuum and allowed State Owned Enterprises to determine the policy discourse. The importance of policy is that it creates certainty among the role-players and outline the road-map for future decisions. As part of the study the absence of the policy framework is evident in issues such as industry structure for the rail sector. Peters (2011) emphasise the role of government in providing a policy certainty in guiding the rules of the game. This is further aligned to the views of World Bank in describing the roles that government must play within the railway environment. Government should determine the industry structure that will facilitate the relevant institutions to deliver the rail services (World Bank, 2015). The research finding has shown that the absence of policy has not stabilised railway sector and without relevant delivery mechanisms in the railway sector. This has demonstrated that even though plans are conceptualised well, all the enabling conditions must be put in place.

## 6.3. **RECOMMENDATIONS**

### **6.3.1. Funding mobilisation**

Lack of Funds to implement the National Rail Plan had been at the cornerstone of the delay amongst all the strategic projects. If government want rail transport to be the backbone of public transport in the country, it must prioritise it. Various studies show that our cities will reach road transport gridlock very soon. Rail is the only guided transit mode which will help South Africa to move commuters between Pretoria and Johannesburg in significant numbers. This mode of transport has other benefits including the reduction of the Green House Emissions and contribution to the green economy. Government must address and prioritise rail passenger funding when it comes to two aspects, which are funding for capital Projects with regard to infrastructure and operational subsidy. The DOT through the medium term budget request to the National Treasury must start motivating for the overall funding of railway. The research recognises the

injection R 57 billion that Government has made with the new rolling stock, but it is insufficient to recover from many years of underinvestment.

### 6.3.2. Realignment of PRASA structure

Through the implementation challenges that were experienced during the implementation phase of the National Rail Plan, it is evident that PRASA in its present form is not the right vehicle to take passenger rail to the next level. The human resources that are needed to deliver the mandate of the PRASA as enshrined in the legal succession Act must the deployed at the right level. PRASA must start a process of introspection of where resources are required most by cutting the corporate office and capacitate the regions such as Tshwane, Johannesburg, EThekwini and Cape Town. This can either be done through deploying some technical skills such as rail engineers to the regional office or make PRASA a key unit in the delivery of commuter rail in South Africa. If this exercise is done correctly it will assist in addressing the skills and capacity shortages which have been experienced during the implementation of the Rail Plan. This strategy will be beneficial to the millions of commuters of using trains during peak hours. They regularly experience poor service of trains being either late or they do not arrive at all. To deliver this public good called “public transport”, the DOT as a shareholder should ensure that this realignment happen in a short period. This proposal is aligned to the National Development 2030 in developing the capacity of state owned enterprises to deliver within the concept of a developmental state (National Planning Commission, 2012).

### 6.3.3. Finalisation of the Rail Regulatory Framework

For the railway sector to play its role within the national transport task by improved access to economic opportunities and providing mobility needs, an articulated policy framework is urgently required. The Department of Transport as the policy custodian have launched a Green Paper on National Rail Policy in August 2015 by the Minister of Transport Ms Dipuo Peters. The Green paper thrust is on inherent competitiveness and to revitalise railways through strategically focused led intervention to position both passenger and freight

transport (DOT, 2015). The DOT must finalise the policy as a matter of urgency to ensure certainty in the sector. The absence of the policy framework has resulted with undesired consequences among the role players. The policy will be of benefit to the society as it will make pronouncements on issues such as Market structure, Private sector participation and funding options. The DOT must further develop a National Rail Bill to make sure that policy is enforceable.

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## APPENDIX A

*Table 1 List of people to interviewed*

| Institution | Area of Speciality | Confirmation |
|---|---|---|
| Department of Transport | Rail Infrastructure | Granted |
| Independent Consultant | Transport Economist | Granted |
| Passenger Rail Agency of South Africa | Chief Executive Officer: PRASA Rail | Granted |
| Passenger Rail Agency of South Africa | Strategic Asset Management | Granted |
| Department of Transport | Rail Regulation | Granted |
| Department of transport | Railway Safety Regulation | Granted |
| Passenger Rail Agency of South Africa | Rail Operations | Granted |
| Passenger Rail Agency of South Africa | Group Rail Planning | Granted |
| SMEC consulting Engineers | Rail Engineer | Granted |
| Department of Transport | Rail Operations and Oversight | Granted |
| Independent Consultant | Rail Operations specialist | Granted |
| Railway Safety Regulator | Chief Executive Officer: RSR | Granted |

| | | |
|---|---|---|
| Passenger Rail Agency of South Africa | Rail Operations and Management | Granted |

**APPENDIX B**

Dear Sir/ Madam

My name is Ngwako Makaepea, am currently conducting research for my Masters of Management in Public Policy degree at the Wits School of Public and Development Management under the supervision of Mr. Dikgang Motsepe.

My research topic looks at the implementation of the National Passenger Rail Plan on priority corridors as outlined in the **2006 National Passenger Rail Plan.** The objective of the National Passenger National Rail Plan was to arrest the decline in passenger rail services and secure a future for sustainable passenger rail services. The approach was to start with the priority corridors in order to stop the bleeding in the passenger rail services. This research therefore wants to find the progress on the implementation of the initiatives as stated in the plan in the Tshwane and Wits regions, lastly to gather any challenges and lessons learned to improve our rail network in future interventions. You co-operation and participation in this research will contribute to the body of knowledge to ensure that rail services and programs are responsive to the needs of the commuters.

Your organisation has been selected to participate in this study and I would like to set up an interview with you at your earliest convenience. I have attached the copy of the interview questions that I would like you to respond as part of the interview. All information will be treated confidentially and will not be attributable to individuals in the report. A copy of my research will be available at Wits Business School library and the Department of Transport Library (159 Struben Street, Pretoria). Electronic copies will be available on request.

Thank you in anticipation for your participation.

Regards,

**Ngwako Makaepea**

# APPENDIX C

# INTERVIEW QUESTIONS

**The implementation of the National Passenger Rail Plan on priority corridors**

1. In your opinion, what are the underlying factors for creating stumbling blocks in the implementation of the National Passenger Rail Plan? List factors.

2. In your opinion, which aspect in the strategic infrastructure investment projects has shown progress in priority corridors? Please answer with Yes or No. Please elaborate on lessons learned and challenges if any

2.1. Track related improvements

2.1.1. Track doubling

2.1.2. Track rehabilitation

2.1.3. Construction of turning loops

2.1.4. Track side improvements

2.2. Electrical

2.2.1. Traction and transformer replacement

2.2.2. Substation upgrades and replacement

2.2.3. OHTE upgrading and replacement

2.3. Station improvements

2.3.1. New stations

2.3.2. Station upgrades

2.3.3. Additional foot bridges

2.3.4. Ticketing offices

2.3.5. CCTV cameras

2.4. Signal upgrading

2.4.1. New signal equipment

2.4.2. Installation of signal backup systems

2.5. Rolling Stock

2.5.1 Refurbishment and upgrades

2.5.2 New Rolling Stock

3. What do you think are the strategies/ plans/interventions to be considered by the Department of Transport and PRASA for the successful implementation of the National Passenger Rail Plan?

4. In your opinion, what are the strategic intervention to be considered for sustainable rail passenger operations in South Africa?