



# Department of Transport Vision:

Our vision is to **provide safe, reliable, effective, efficient and fully integrated transport** systems and operations as well as infrastructure, which will best meet the needs of freight and passenger customers and commuters 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.





## FOREWORD BY THE MINISTER



**HONOURABLE JT RADEBE**

### NATIONAL FREIGHT LOGISTICS STRATEGY

I am indeed excited to launch the National Freight Logistics Strategy (NFLS) that ushers in a new dawn for the freight logistics system in South Africa. The NFLS represents the outcome of sustained effort of a range of Government Departments at all levels and all spheres, the costly and tireless effort of numerous stakeholders in the SOE's and private companies as well as the significant support of my Cabinet colleagues.

The NFLS represents a significant shift from the current freight system. It seeks to build on the world class infrastructure and operations we have in some areas of the system, while setting a clear framework for addressing system and meso-level challenges that constrain other areas of the freight system. It sets the strategic framework for institutional reform and industrial structuring that will ensure a more efficient freight system that allows greater system access to current marginalised service providers and cargo owners, while putting downward pressure on pricing and transit and handling times. A significant component of the NFLS deals with creating more space for the private sector to play a meaningful role in all aspects of the freight system. Another significant thrust of the NFLS is to provide the context for the introduction of competition to various components of the freight system that are currently operated as monopolies.

I therefore urge all roleplayers to continue this level of enthusiasm and support during the implementation phase of this National Freight Logistics Strategy.

**MR JT Radebe**  
**Minister of Transport**

## EXECUTIVE SUMMARY

The freight system in South Africa and its links with the sub-region are a collection of networks that deliver a range of services that are both excellent and poor, depending on the infrastructure and operations, and the specific modal challenges in that area. The growth of freight traffic has surpassed most of the 20-year growth forecasts made by Moving South Africa, at least 14 years before they were expected. This has placed massive pressure on infrastructure and operations to deliver acceptable services while the system is being transformed to respond to the growth and level of demand. The National Freight Logistics strategy is a response to the freight system's inability to fulfill the demand for cargo movement at prices, levels of service, quality of service, and at acceptable levels of reliability in a manner that supports the national developmental strategies. This failure stems from an inappropriate institutional and regulatory structure that does not punish inefficiency and reward efficiency. It is structurally incapable of appropriately allocating external costs and raising efficiency. Although elements of the system, such as the national road network, are of a high standard and even surpass those found in some developed economies, it is the system-level performance and state of infrastructure that need attention. Improvement can only be achieved by an integrated system-level approach. This strategy signals a shift toward demand-driven delivery of freight logistics services, rather than a supply approach.

The problem statement defines the key (though not all) challenges within the system as follows:

*“The freight system in South Africa is fraught with inefficiencies at system and firm levels. There are infrastructure shortfalls and mismatches; the institutional structure of the freight sector is inappropriate, and there is a lack of integrated planning. Information gaps and asymmetries abound; the skills base is deficient, and the regulatory frameworks are incapable of resolving problems in the industry.”*

The impact of this is severe. Not only is the sustainability of South African industry and employment reduced, but consequences are also dire for economies (such as Lesotho and Zimbabwe) that face greater developmental challenges than our own, but are reliant on our freight logistics system. The inability of the freight system to respond to the imperatives of integrating the first and second economy, which will reduce the cost of doing business and reduce the cost of living, will fundamentally impact on our ability to deliver on these developmental imperatives.

The vision of the freight logistics system is to respond to problems in institutional and regulatory frameworks; infrastructure; ownership; management; operations; skills; financing structures, and methodologies for the freight system. The vision requires that Government take a more interventionist approach to regulating the freight system, to ensure that the incidental costs of externalities and inefficiencies are not merely passed on to cargo owners, but are correctly allocated. The move from modal regulators, which create regulatory gaps when cargoes change mode (coupled with the drive toward integrated inter-modal cargo movements), towards functional regulators (economic, security, safety and environment) that regulate across the entire consignment lifecycle, is designed to rationalise regulatory functions, and reduce the proliferation of modal transport regulators that are created to deal with specific aspects of sectoral regulation. The vision articulates the need to own infrastructure in three ways. They are: state infrastructure utilities that have a strategic and economic developmental mandate; state-owned enterprises that are commercialised public infrastructure owners with socio-economic obligations rather than a pure profit agenda, and private sector infrastructure owners. These infrastructure owners need to be sufficiently separated from operators, to allow the introduction of competition in operations in the public owned and operated infrastructure. This must be accompanied by the creation of a space for private sector involvement in ownership, funding and operation of infrastructure. This will resolve components of the current decline in services to rural and regional economies, increase the levels of efficiency and customer choice, and ensure that infrastructure is optimally used and expanded





in the state developmental agenda's interest. The management of infrastructure is to be done mainly by the state, to ensure level playing fields and the advancement of regional and local socio-economic imperatives by intra-network level subsidisation and network expansion. An economic regulator will manage the relationship between the infrastructure owners and the operators of a particular network. The other regulators will ensure that the mechanisms and processes needed to reduce the external costs involved in freight transport systems are in place. All regulators will manage the mechanisms of the regulatory regime within the parameters of the policy directives issued by the Minister of Transport. Essential to the strategy is the need to develop, execute and manage funding schemes for the implementation of the strategy, which must include a space for public and private funding of a debt and equity nature.

The implementation of the strategy is designed within an existing structure: the Inter-Departmental Task Team on Logistics. The approach to regulatory and institutional reform is to use existing legal, corporate governance and regulatory instruments to move the system towards the desired institutional and regulatory end-state, while the legislation, regulations and institutions are created. A major component of implementation is the development of integrated planning and the creation of a freight transport master-plan that integrates the planning of Government into all spheres: public agencies and the private sector, from both an infrastructure and operations perspective. This will be supported by an information collection and management approach, which includes a platform development for systems and information integration across the sub-sector. The implementation further establishes a co-ordinated approach to skills development in the sub-sector.

The implementation involves special emphasis of two elements: first and second economy integration with development of rural freight transport systems from a freight system perspective, and an approach to corridor development along certain defined critical freight corridors. The freight corridor implementation will focus on localised and specific implementation initiatives that target operational and tactical responses to the challenges facing each corridor, and the nodes along such a corridor, while system-level responses are dealt with holistically on a national level. This corridor approach will be integrated across the public sector and at all spheres of Government with private sector involvement in planning and implementation.

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## 1. INTRODUCTION

The continuous process of change in international transport management over the last ten years, together with a period of the democratic order, from a segmented modal approach towards a much more integrated transport concept tailored to meet the pressing needs of customer industries better, is resulting in increased pressure on seaports, aviation and land transport (road, rail and pipelines) systems to adapt their role and function to this more demanding operational environment. This entails the rethinking of national transport development strategies, as well as far-reaching reforms in the legislative, regulatory, institutional and managerial environments within which commercial transport operators must operate.

In particular, the need to define new partnerships between the public and private sectors in transport operations, investment financing and asset management, imposes the need for a review of the respective roles of public and private sectors, and specifically calls for a clarification of the mandate of the public sector in helping develop an efficient transport logistics systems. This mandate is likely to perform a catalysing and facilitating function, and it will ensure compliance with public statutory duties, while paying particular attention to transport safety and environmental protection.

The efficiency of inland transport in serving an increasing and often disputed hinterland is critical to the socio-economic development of South Africa. It has become apparent that the majority of freight movement is internal, contrary to the perceived importance of corridor movements that maintain exports and imports through the country's ports. It is therefore important for the system to be able to bring marginalised and/or rural producers of goods and services into the primary freight transport system, and also be able to respond to the ever-increasing freight on the various networks of the transport system outside the main corridors.

Therefore, the system's ability to respond has become a critical factor in the proposed future of the freight system, as well as of overall trade growth prospects. Today's global logistics organisation makes it mandatory for shippers worldwide to be able to rely on seamless transport chains. Smooth interaction between the port and the city surrounding it, in terms of transport network requirements, environmental protection, and overall safety, is therefore a prerequisite for effective delivery of integrated logistics services.

In defining the roles of both the public sector and private sector players properly, it becomes rather important to look at the changes required from the policy point of view, which will thus inform the legislative changes to define the new institutional order for both sectors to play their roles without artificially constructed and maintained market anomalies.

### *A New Public/Private Balance*

The issue of effectively delimited public/private boundaries in transport activities is likely to be the prominent question in any reform process proposed in this strategy. It involves a clear definition of the public sector mandate and of its relationships with its private partners, with a view to fostering private sector-led investment, capacity development, and operational efficiency. This is not to be confused with the well-known, unproven contention that private sector is more efficient than public sector, and that parastatals tend to be more efficient at "commercial" activities than state utility agencies. This requires a comprehensive understanding of the interests at stake, so that public and private partners can be in a position from which they can provide each other with the services they are best equipped to deliver: an efficient and clear regulatory environment and a basic set of well-interconnected infrastructure networks, and a cost-effective transport system.

It seems possible to identify some main functions for the public sector within the transport sector. These functions are:

- to regulate the freight system to ensure economic efficiency,
- to own and provide financing for strategic or common user infrastructure components in either the Infrastructure Utilities or SOEs, and to pave the way for increased private financing of facilities,
- to promote better physical and operational integration of seaports, airports and land transport networks,
- to ensure appropriate safety conditions in transport activities, and to exercise effective supervision of the environmental and security elements of the freight system,
- to contribute to the trade facilitation process at all borders and interfaces, and thus to help ports and land transport entities (whether public or private) to act as creative partners in international trade development.

The following are functions identified for private sector in the transport sector:

- first of all to provide superstructure and/or operations investment,
- to provide operational management within an appropriate regulatory environment, free from unnecessary public sector activity crowd-out,
- to promote operational integration and efficiency, in order to foster economic growth and development,
- to invest in infrastructure from both a debt and an equity perspective.

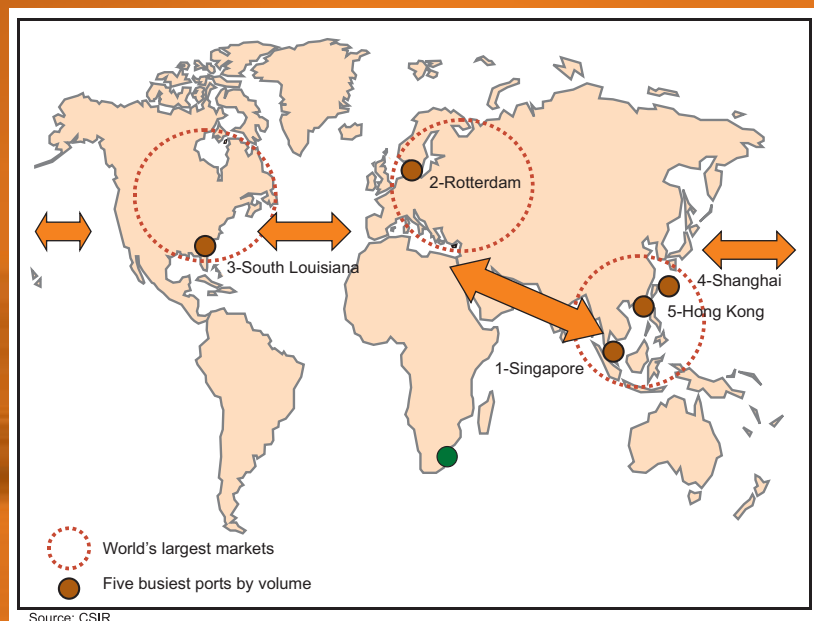




## 2. PROBLEM STATEMENT

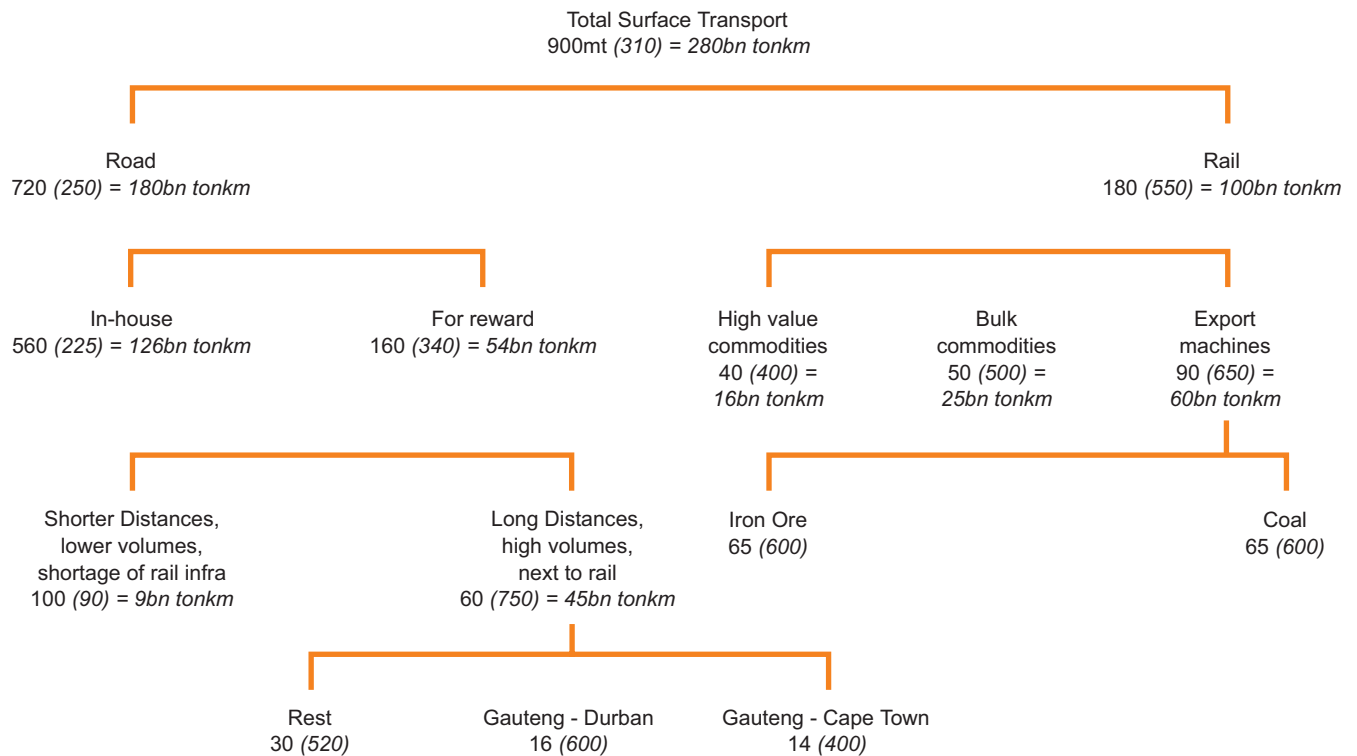
The strategy that the department is developing seeks to address a number of issues that undermine the competitive advantage that South Africa enjoys and render it less competitive and relevant in world markets. South Africa's geographic position, relative to global routes, is a disadvantage in itself. It is therefore important that the transport system support South African products/goods and services in order for them to be and remain competitive in global markets that are not skewed in their favour already because of our geographic location.

The diagram below illustrates the well-developed global routes around highly efficient port systems with huge base markets that South Africa's products must compete with:



In addition, South African transport networks move about 900 million metric tons of cargo per annum. In the light of the above challenge posed by geographic position, South African products that move in the hinterland face a difficult challenge in terms of the inefficiencies in our ports and rail environment. If South Africa is to take advantage of its competitive edge in global markets, South Africa must respond to these challenges in an effort to respond to the diagram on the following page. This diagram shows the extent of the movement of goods internally:

**The structure of the surface freight transport market-  
South Africa's surface freight transport market (million tons)**



Current rough estimates based on 1999 base case  
Note: Figure in bracket denotes average transport distance

Source: CSIR and University of Stellenbosch

In the context of the critical role that the freight system plays in building and maintaining the South African economy, the problem statement that this strategy responds to is:

*“The freight system in South Africa is fraught with inefficiencies at system and firm levels. There are infrastructure shortfalls and mismatches; the institutional structure of the freight sector is inappropriate, and there is a lack of integrated planning. Information gaps and asymmetries abound; the skills base is deficient, and the regulatory frameworks are incapable of resolving problems in the industry.”*

This problem statement is not comprehensive, but articulates the key freight areas impacting negatively on the economic and social development of South Africa, which, if left unaddressed, would impose major constraints on the country’s ability to deliver economic development and jobs in the medium to long term at a rate that is consistent with our requirements. The main challenges facing South African exports and imports are the inefficiencies that constrain the entire transport system from port operations to rail operations. These inefficiencies are the result of a number of issues:

- low levels of investment in certain infrastructural and operational equipment. Ageing rail rolling stock and port-operating equipment that undermine efforts by government and port authorities to turn these entities around in order to respond to the demanding global growth of freight movements,
- rigid management practices formed by supply driven strategies. In the rail sector, for example, management should change its rigid approach to rail service, which places customers at the end of a supply driven strategy and service-delivery ethos, and thus undermines their responsiveness to their clients and results in lost business,





- rigid costing approaches that are not customised. Costing methods used to develop and set tariffs are rigid and are not activity-based. If we are to reduce the cost of doing business, there should be a reform of the tariff setting regime in both the ports and rail sectors.

South Africa's infrastructure conditions in some components of all modes poses a serious safety problem. It is imperative to define who owns - and therefore is responsible for - the development, maintenance and management of infrastructure, so as to reverse the condition of some of the modal infrastructure challenges. The over emphasis on revenue generation possibilities has led to a co-existence of positive and negative conditions. For example, the coal and iron ore export railway lines are of a world-class from both an operational and an infrastructural perspective, but co-exist with branch lines that are in a state of disrepair, which only allows lower loads at speed restrictions.

The main challenge facing transport performance is the fact that funding and financing of transport infrastructure, network development and maintenance is not constant and responsive to transport demand and infrastructure utilisation over the long-term. The management of infrastructure should also respond to issues of external costs and cost recovery for sustainable management, and delivery of appropriate infrastructure, in order to enable seamless movement of goods and services across the entire transport system. For RSA to have sustainable delivery of infrastructure, the current approach to revenue driven infrastructure development must be modified to have a higher degree of strategic and developmental intent. Unregulated transfer payments within diversified transport holdings also have the effect of transferring the incidental costs of inefficiencies to cargo users of unrelated infrastructures. The existing "commercial" approach to infrastructure is misaligned with Government policies dealing with balanced and distributed benefits of economic development and prosperity, due to financial performance measures that are inappropriately designed and imposed on the process. The result of "commercially" driven infrastructure provision decision-making is that investment pursues financial reporting time frame revenue (12 months to five years), and not long-term economic development that is the planning time frame of infrastructure, particularly strategic and developmental infrastructure. An example of this is the low-level of SOE infrastructure investment targeted at reducing disparities between first and second economy production systems. In the rail sector for example, the majority of investment in infrastructure upgrades, maintenance and network capacity expansion, is targeted at the higher revenue and dedicated customer lines that almost invariably serve big business and the first economy. Only about 1% of rail investment planned over the next 5 years is earmarked for branch lines, the part of the rail network that best links up the first and second economies. This "commercial" approach is exacerbated by the desire in SOEs to classify all economic developmental infrastructure as the responsibility of Government, to be transferred to the direct control of the state, while wishing to retain commercially sustainable infrastructure to extract monopoly rents from the transport operators and cargo owners. The net effect of such splitting of "commercial" and developmental networks is to create a viable network with high return on investment, ease of funding and the ability to extract monopoly rents from cargo owners, and a network of ageing and under maintained infrastructure with low traffic volumes, massive backlogs and major funding requirements, which become the Government's responsibility.

The other challenge that faces goods in transit is the fact that their security enroute to destination cannot be ensured, as a holistic approach to security is not possible in the current dysfunctional regulatory framework that does not allow a full transit and storage lifecycle oversight by a single regulatory framework. This challenge requires Government to ensure a systemic supervision of cargo while ensuring that the framework manages modal- and operations-specific matters appropriately.

Regulation of access to networks and infrastructure utilisation is absent in two of the key sectors that are the backbone of the country's economic development, namely the rail and port sectors. The current monopolistic nature of the industries has led to abuse of power by the entities that manage and run operations on the infrastructure.

The reduction in infrastructure spending and operational capacity in the least developed areas in the country has resulted from commercial discipline being imposed on some entities across the entire network, rather than more sophisticated measures of performance that allow objective assessment of economic value-add on a broader base than just balance sheet performance. The dual mandate that has been imposed on some entities has not been effectively accounted for, in order to allow for the delivery of socio-economic development infrastructure and services. The existence of operations entities within the same holding company as the infrastructure companies exacerbates perverse behavior and pricing further, while transfer pricing entrenches the inability to introduce competition in the medium to long term without radical shifts in regulatory and industrial restructuring leadership from the state.

The fact that the current skills base falls short of an effective response to the demands of global logistics needs to be addressed. To this end, government must engage both the private sector and the Transport Education and Training Authority (TETA) to identify areas that are critical and short of skills, and devise mechanisms to develop the necessary skills base to respond to the challenges. The current training reality is that upper levels of management in these public and private entities continue to receive the majority of spending on skills development, while a massive skill gap is being created in the middle levels. Lower level skills have been receiving attention of late, but the emphasis has been on very basic skills and functional competencies that are not designed within an employment lifecycle development programme. The training delivery schedules of all stakeholders are not aligned and appear to be targeted at existing skill structures in the industry, rather than preparing the country to respond to future challenges. Anecdotal evidence suggests that the major mid level technical echelons in many transport organisations are filled by white males about 5 to 10 years away from retirement, with no active recruitment and training of suitable replacements. This suggests that we may face a situation in which our ability to deliver transport services at current technology levels, excluding future advances in technology, could be reduced in the future.

For government across all spheres to plan with certainty, align their activities and provide adequate and necessary infrastructure to support transport sector operations over a sustainable period, collation and collection of reliable and accurate information becomes imperative. This information should provide local government planners with what they need to plan properly for effective infrastructure delivery and management. It must also provide both national and provincial governments with information to develop tools that respond to developmental needs, as well as prepare the system for future demand-side change. In the current environment, information on the freight system is patchy; often has conflicting time cycles; is not comparable due to fuzzy definitions and interpretations that differ from party to party (even within Government); is difficult to access, and is not able to be integrated because of a lack of system-level integration capability and a lack of a data standards.

Lack of integrated policy, strategy, planning and forecasting on national and regional levels leads to a disjuncture between national plans and regional planning and infrastructure, standards and systems non-integration and non-interconnectivity. The lack of interconnectivity, standard harmonisation and system integration leads to unequal development of infrastructure and maintenance.



### 3. SITUATIONAL ANALYSIS

#### *The Overall Picture*

An analysis of the South African freight system shows that our world class infrastructure and operations environments co-exist with underfunded and badly serviced infrastructure and operations. Our coal and iron ore export rail lines are among the most efficient in the world, and at various stages were the most efficient operations of their type in the world. These world class and often best practice transport environments are, however, not representative of the majority of the freight transport system in South Africa. The national road network is of a high quality and appropriate for traffic levels, and has managed to absorb a massive increase in freight road traffic without major degradation or excessive congestion, barring those national road components that move through metropolitan areas, which have suffered congestion resulting from increased private transport levels due to economic prosperity. These high quality environments rival their counterparts in many developed countries around the world. The challenge that this poses to the analysis and correction of the situation is to develop a balance between articulating the successes of the system on the one hand and providing a sober assessment of, and response to, the failings of that system. Both to overemphasise the negative and to under-emphasise the negative are equally damaging to the process. For the purposes of brevity, this document primarily articulates the problems that exist within the current freight system, while drawing on our wide range of successes as the base for the development of the vision and its implementation.

The system can be divided into components that function very efficiently and are adequately capitalised and managed, and those that face infrastructure and operations challenges. For example, the national road network is in a good condition and is adequate for the traffic levels that it faces. The road haul operation on this infrastructure does, however, differ: it is a combination of highly efficient, well-capitalised operators that co-exist with marginal operators, which face pricing that is not sustainable, and require a certain degree of entropy to survive. Because of the harsh cost/revenue structures that face these marginal operators, they operate by decapitalising their fleet through lack of maintenance; overworking their staff; overloading their vehicles, and damaging the roads. Invariably, they spend most of their travel time off the national road network, which has high levels of enforcement. Their extended travel on the provincial and local road network has major implications for the total system level condition. These overloaded vehicles damage the secondary network to such a degree that the total road network capital stock is reduced over time, if left uncorrected. This interplay between negative and positive needs to be managed by regulation, and addressed by the sub sectoral strategies in an integrated manner.

#### **3.1 Economic Outlook**

Over the past two decades, the South African economy has shifted from a primarily inward focused economy, which uses import substitution with a heavy reliance on primary product exports, to a manufacturing and service economy with an increasingly high export orientation. As the economy emerged in the early 1990s from a formerly highly protectionist regime, it focused on its competitive advantage in bulk-export commodities. More recently, however, other sectors with less of a primary product orientation, such as processed steel, timber and chemicals, have begun to gain competitive advantages. Similarly, high value sectors such as the automotive and other advanced and specialist manufacturing sectors have increasingly shown sustained competitive advantage.

As South Africa enhances its international competitiveness and further unlocks its industry's potential, the freight logistics sector will play a key role in reducing costs and enhancing the reliability of moving goods, both within the domestic economy, and between South Africa and its trading partners. Exports have grown by 25% between 1996 and 2000. The immediate benefits of restructuring the freight logistics sector will be sustained economic growth, which in turn will create more employment opportunities and assist in the funding of social development needs.

South Africa is far from its global markets, with its four largest export partners: the UK, the USA, Germany and Japan accounting for 33% of exports. Many of the regions against whom South Africa competes, such as South East Asia, Eastern Europe, South America and Australia are, on average, closer to these markets. This geographic disadvantage is exacerbated by the fact that Gauteng, which is the dominant manufacturing hub, is located some 600 km or more from the major ports. Moreover, the logistics systems needed to support the shift to a manufacturing and service economy have, for a number of reasons, failed to keep up with changes in the national economy. This reduces South Africa's competitiveness and growth potential, and as a result, government intervention is necessary.

According to the 2002 transport industry survey conducted by Statistics South Africa, the total income for the transport industry in 2002 was R121 193 million. The survey revealed that the largest contributor to GDP was land transport (road and rail) (R50 323 mil or 41,5%), followed by supporting and auxiliary activities (R40 628 mil or 33,5%), air transport (R25 648 mil or 21,2%) and water transport (R4 594 mil or 3,8%). Most of the income in the transport industry was procured in the transportation of goods (R46 339 mil or 38,2%). The total expenditure in the transport industry was R110 206 mil, and the largest contributor was land transport (R47 414 mil or 43,0%), followed by supporting and auxiliary services (R39 083 mil or 35,5%), air transport (R20 153 mil or 18,3%) and water transport (R3 556 mil or 3,2%). With respect to net profit before tax, R9 235 mil was recorded. The largest contributor was air transport (R2 967 mil or 32,1%), followed by land transport (R2 855 mil or 30,9%), supporting and auxiliary activities (R2 371 mil or 25,7%) and water transport (R1 042 mil or 11,3%).

### 3.2 Institutional Overview

The freight transport industry is a complex institutional model that varies across the input sectors. Government is generally responsible for the development of policy and the execution of regulatory functions. Government commercial entities perform a significant role in the development of policy; the regulation of the industry; in infrastructure development, and in operations of ports and rail. The role of the private sector varies significantly across the input sectors from very limited scope in rail and ports to complete domination in road freight transport.

With the evolution of the governance model in South Africa, arms length service delivery entities i.e. State Owned Enterprises (SOE's) have had a broad scope of involvement in the provision of freight transport services from policy development through to regulation and service delivery.

- Rail - Transnet develops rail policy (by default, due to its dominance), conducts economic and safety regulation, provides and maintains infrastructure, and is also responsible for freight transport operations.
- Ports - The National Ports Authority (NPA) is responsible for the development and maintenance of port infrastructure, while the South African Port Operations (SAPO) is responsible for cargo movement operations at ports. Economic and safety regulation at the ports is solely administered by the agencies themselves, while seaside regulation is conducted by the South African Maritime Safety Authority (SAMSA) and the Department of Environmental Affairs and Tourism (DEAT).
- Road - Government is responsible for the development of road infrastructure, and only the national road network system is the responsibility of a public commercial entity i.e. the South African National Road Agency Limited (SANRAL). There is currently limited economic regulation of freight transport movement on the road network, and safety regulation is mainly the responsibility of government law enforcement authorities.
- Aviation - The Airports Company of South Africa (ACSA) is responsible for the development and maintenance of aviation infrastructure, the South African Civil Aviation Authority (SACAA) is responsible for safety regulation, while the "Regulating Committee" administers economic regulation.





The operating environment is characterised by open competition on the one hand (as in the road and airfreight sectors), whilst on the other hand it is characterised by monopolies that reduce efficiency and the value proposition to customers (as in the ports and rail sectors). In addition, shortfalls in infrastructure provision and poor infrastructure maintenance contribute to a poor value proposition to customers and add to the logistics cost burden.

The lack of integrated planning of infrastructure between the various spheres of Government, parastatals, agencies, and the private sector has ensured that the most appropriate and optimal infrastructural solutions are not always possible. This has resulted from the lack of integration between various players, and due to the lack of co-ordination in the phasing of the delivery of infrastructure. This has major implications for time and cost efficiencies in transport and logistics, such as congestion at port-road interfaces that have impact on both the movement of cargo through such a port, and the movement of people through the city that the port is in.

Our infrastructure is inappropriate for the development path of our country, and needs to be revamped in order to prevent the perpetuation of our existing problems. Furthermore, our regulatory regime has not been adequate to constrain the pricing of monopoly infrastructure entities. The infrastructure monopolies have extracted huge margins from the movement of cargo, without ensuring sustainable levels of re-investment. These profits have tended to be used to subsidise inefficient operations and loss making components in other areas of the transport and logistics sector, rather than raising our capacity over time. A further complication of the existing infrastructural system is that it largely bypasses the rural nodes that have the highest levels of poverty and unemployment. This has further entrenched the underdevelopment of these centres, and ensured that production centres in these regions are largely restricted to servicing internal markets due to the last mile costs of accessing external markets, and the higher order elements of the production value chain.

### 3.2.1 Poor institutional environment

Monopolies that are sustained within the freight logistics sector contribute significantly to high levels of inefficiency. This leads to a situation in which there is little incentive to reduce costs. This is mainly a consequence of the excessive market power held by organisations within the Transnet group. Again, these are strongly evident in ports and rail, but there are also some institutional issues in airfreight and, to a lesser degree, with respect to the institutional management of border posts.

In relation to the roles and responsibilities of the current institutional environment, there is a high level of overlap, poor market signals, the ability of some players to dominate the market, lack of customer focus, collaboration and integration. The almost unconstrained role of the dominant market players in rail and ports has led to a *de facto* position of the entire industry being held to ransom by events that are unrelated to that particular market. Here is a case in point: though the NPA is extracting massive monopoly rents and is able to withdraw billions from cargo owners and transport service providers, its ports development programme has been constrained by the gearing on the Transnet balance sheet, to the extent that many of South Africa's harbours are not capable of receiving the new deeper draught container vessels. This is due to a lack of funding for the dredging requested by individual port planners (where such a constraint is the factor that inhibits). The lack of systems integration between the various parties in the freight logistics system has negative consequences for the free movement of goods across the country and across modes and facilities. The lack of integration within Transnet itself needs to be addressed, and is currently receiving major management attention.

### 3.2.2 Regulatory Environment

The regulatory environment is characterised by a fragmented structure with inconsistent levels of safety and economic regulation across input sectors. Currently there is no transport sector safety and economic regulation, and mode specific regulation is a combination of independent functional and internal regulation within and over SOEs.

Safety and environmental regulation are hampered by the poor asset quality that is found within the freight logistics environment, particularly within the rail sector, and in some cases, in road freight. The poor asset quality in road freight is mainly caused by the overly competitive environment in which small road haulers operate. The condition of railway rolling stock and container handling equipment at ports, and the condition of secondary roads serve as examples of poor quality assets that could compromise safety and environmental regulation. Recently, a Railway Safety Regulator has been created to regulate safety in railways. The operational capacity of this regulator has hampered its effectiveness in engaging Spoornet at an operational (rather than system) level.

| CURRENT REALITY |                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|-----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Function        | Policy                                                                                                                                                                                                                                                                                                               | Economic regulation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Safety and environment regulation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Infrastructure                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Operations                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|                 | <ul style="list-style-type: none"> <li>• <b>DoT</b> <ul style="list-style-type: none"> <li>- Transport policy?</li> </ul> </li> <li>• <b>Transnet</b> <ul style="list-style-type: none"> <li>- Investment</li> <li>- Structure</li> <li>- Price</li> </ul> </li> <li>• <b>ACSA</b></li> <li>• <b>ATNS</b></li> </ul> | <ul style="list-style-type: none"> <li>• <b>DoT</b> <ul style="list-style-type: none"> <li>- Aviation</li> </ul> </li> <li>• <b>DPE</b> <ul style="list-style-type: none"> <li>- Shareholder</li> </ul> </li> <li>• <b>DTI</b> <ul style="list-style-type: none"> <li>- Factor conditions</li> </ul> </li> <li>• <b>SARS</b> <ul style="list-style-type: none"> <li>- Border posts</li> </ul> </li> <li>• <b>Transnet</b> <ul style="list-style-type: none"> <li>- Port landlord</li> <li>- Pricing</li> <li>- Infrastructure</li> </ul> </li> <li>• <b>SANRAL</b> <ul style="list-style-type: none"> <li>- Toll roads</li> </ul> </li> <li>• <b>Provinces</b> <ul style="list-style-type: none"> <li>- Licence fees</li> </ul> </li> <li>• <b>Air</b> <ul style="list-style-type: none"> <li>- Bi-laterals</li> </ul> </li> <li>• <b>Competition Commission</b> <ul style="list-style-type: none"> <li>- Industry structure</li> </ul> </li> </ul> | <ul style="list-style-type: none"> <li>• <b>RTMC</b> <ul style="list-style-type: none"> <li>- Road</li> </ul> </li> <li>• <b>RSR*</b> <ul style="list-style-type: none"> <li>- Rail</li> </ul> </li> <li>• <b>SACAA*</b> <ul style="list-style-type: none"> <li>- Aviation</li> </ul> </li> <li>• <b>SAMSA</b> <ul style="list-style-type: none"> <li>- Maritime</li> </ul> </li> <li>• <b>DEAT</b> <ul style="list-style-type: none"> <li>- IEM as part of Environment Conservation Act</li> </ul> </li> </ul> <p><i>*Infrastructure, operations, personnel &amp; limited environmental</i></p> | <ul style="list-style-type: none"> <li>• <b>Rail</b> <ul style="list-style-type: none"> <li>- Owned &amp; managed by Transnet</li> </ul> </li> <li>• <b>Ports</b> <ul style="list-style-type: none"> <li>- Owned &amp; managed by Transnet</li> </ul> </li> <li>• <b>Road</b> <ul style="list-style-type: none"> <li>- Different spheres of Government</li> </ul> </li> <li>• <b>Airports (freight critical)</b> <ul style="list-style-type: none"> <li>- Owned &amp; managed by ACSA</li> </ul> </li> <li>• <b>Airspace</b> <ul style="list-style-type: none"> <li>- ATNS</li> </ul> </li> </ul> | <ul style="list-style-type: none"> <li>• <b>Rail</b> <ul style="list-style-type: none"> <li>- Transnet</li> </ul> </li> <li>• <b>Road</b> <ul style="list-style-type: none"> <li>- Multiple Operators</li> </ul> </li> <li>• <b>Ports</b> <ul style="list-style-type: none"> <li>- Transnet and private operators</li> </ul> </li> <li>• <b>Airports</b> <ul style="list-style-type: none"> <li>- Government/ACSA and Multiple Operators</li> </ul> </li> </ul> |

#### Current industry structures

The regulatory environment is fragmented, with clear economic regulation only applicable to small sub-components of the freight logistics industry. It is also poorly articulated in terms of roles and responsibilities of different bodies that retain overlapping regulatory functions, but with few effective legislative powers to enforce such functions. Monopolies with embedded regulatory power, or where regulation is absent, are able to operate without effective regulatory government oversight. In some cases there is direct conflict with *de facto* economic regulation undertaken over entities within the control of the same organisation. The situation of both player and referee is particularly evident in the case of Ports. Economic regulation is not clearly legislated for, and is inconsistent between sub-components of the freight logistics sector. One of the contributors to poor economic efficiency is lack of regulation, a lack of competition and high tariffs based on administered pricing.

Safety records in rail are established in an environment where neither infrastructure nor assets have been adequately maintained and operational procedures must be adjusted to take this into account. The existing situation in rail is that Spoornet is facing significantly higher numbers of derailments than expected. The level of reporting of minor



derailments cannot be verified, as the Rail Safety Regulator does not have sufficient audit and inspection capacity. In the road sub-sector, safety is poor, particularly in road freight operations, although fatal accidents involving heavy vehicles are showing a slight decline. The lack of a cost structure that reflects the internalisation of externality costs results in these costs (such as pollution, safety and impacts on infrastructure) being excluded in the price structure of both road and rail operators. The failure to adequately address infrastructure issues in rural areas and some of the secondary road networks, contribute to this lack of safety.

The operating environment is characterised by open competition on the one hand, such as in the road and airfreight sectors, whilst on the other hand it is characterised by state owned monopolies that reduce efficiency and the value proposition to customers, such as in the port and rail sectors. In addition, shortfalls in infrastructure provision and poor infrastructure maintenance contribute to a poor value proposition caused by unreliable service and low levels and quality of service and the resultant additions to the logistics cost burden.

| IMPLICATIONS |                                                                                                                                 |                                                                                                                                       |                                                                                                                                     |                                                                                                                                                                                                                                                           |                                                                                                                                                                      |
|--------------|---------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Function     | Policy                                                                                                                          | Economic regulation                                                                                                                   | Safety and environment regulation                                                                                                   | Infrastructure                                                                                                                                                                                                                                            | Operations                                                                                                                                                           |
|              | <ul style="list-style-type: none"> <li>State of balance sheet drives policy</li> <li>Misaligned to national interest</li> </ul> | <ul style="list-style-type: none"> <li>Lack of competition</li> <li>High tariffs</li> <li>Uncontrolled administered prices</li> </ul> | <ul style="list-style-type: none"> <li>Can be compounded by poor asset quality</li> <li>Subject listed activities to IEM</li> </ul> | <ul style="list-style-type: none"> <li>Poor asset utilisation</li> <li>Transnet's poor financial and operational performance drives poor reinvestment resulting in aged asset base</li> <li>Lack of appropriate incentives to drive investment</li> </ul> | <ul style="list-style-type: none"> <li>Inefficiency</li> <li>Unreliability</li> <li>Lack of customer focus</li> <li>Poor integration of Transnet business</li> </ul> |

### Implications of current industry structure

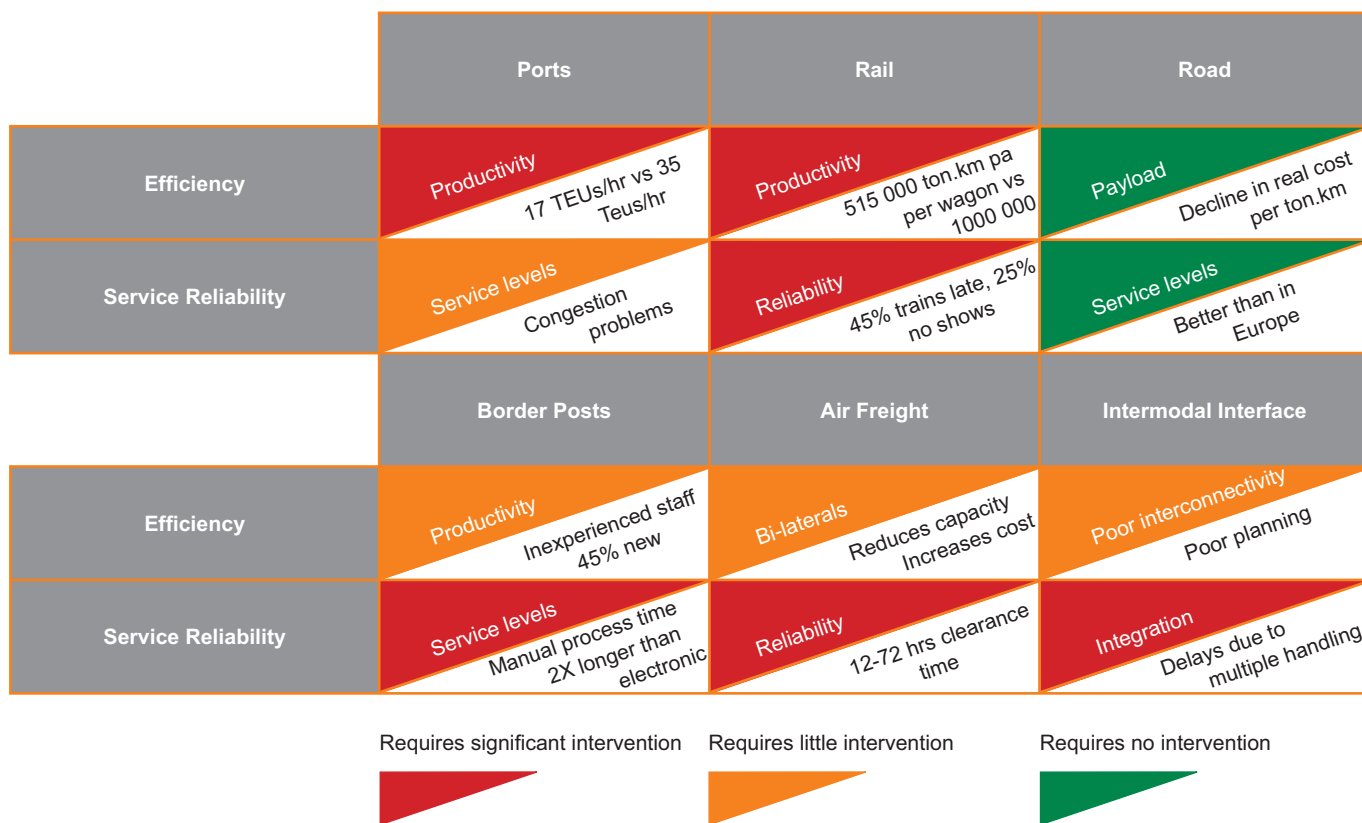
The implication is that policy is often driven by the state of the balance sheet of SOEs and is not always aligned to the national interest. This manifests itself in reduced transport services when the growing economy or commodity supply and demand cycles require extended services to extract maximum economic value from their resources and production in the boom and bust cycle.

On the infrastructure side, there is poor asset utilisation partly because of operator inefficiency, but also due to the asset age and capacity constraints. This is partly caused by Transnet's poor financial performance, which results in poor investment in assets and is compounded by low asset utilisation, which further negatively impacts on financial sustainability.

From a market structure perspective, there is a lack of appropriate incentives to proactively drive investments in infrastructure and moveable assets. The poor state of Transnet's balance sheet implies that investments that would generate healthy future returns are not being made and that the state of Transnet's assets continues to decline. In the road operations sub-sector, smaller operators are facing a downward squeeze on pricing that is seriously reducing their capacity to maintain and grow their fleets, while the larger operators and integrators are extracting higher profits from the cargo owners.

### 3.3 Inefficiency and Poor Service Reliability

The main causes of inefficiency and poor service reliability are an aged asset base, low accountability for operational efficiency and a poor service culture, which are again strongly evident in ports and rail. The outcome of inefficiency and a poor service culture is played out in terms of poor reliability, low productivity, poor service levels and high intransit times. Performance against the criteria of efficiency and service reliability was tested in each of the freight transport modes, and the results are shown in Figure 3.

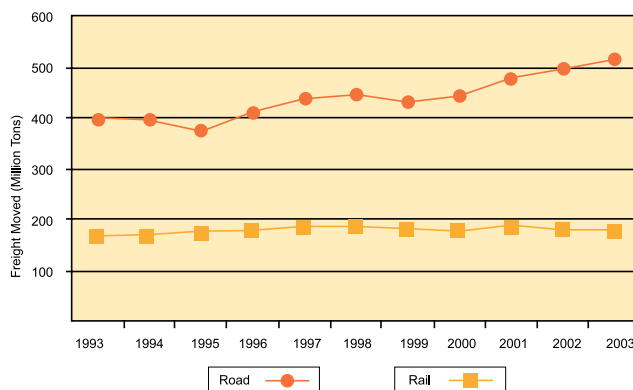


*Inefficiency and a poor service culture across the freight logistic sector(03/04)*

The lack of an effective focus on the needs of customers and the changing orientation of the economy has also lead to a poor alignment between customer needs and the services packages offered by certain modes and a lack of development and investment in human skills.

### 3.4 Modal Description

South Africa moved 693 millions of tons of freight domestically in 2003, 74% by road and 26% by rail. Figure 4 demonstrates the shift between road and rail over the last decade and indicates a 4% annual growth rate per annum for road freight since 2000 in comparison to rail, which has recently shown a slight decline in tonnages moved. Even though Figure 4 shows a relatively constant movement of freight, an increase in the



*South African tonnages carried by road and rail (1993-2003)<sup>1</sup>*

<sup>1</sup> Department of Transport Annual Statistics (2004) and Spoornet (2004)





market for freight was captured by road, hence the growth of the road sector. Airfreight carried an additional 350 thousand tons but, due to the high value nature of this freight, this represents a considerably higher proportion in value terms. Airfreight is projected to grow at 6% per annum. The seaports handle 161 million tons per annum and have seen the fastest growth in container volume of 7.25% per annum since 2000.

### **3.4.1 Rail**

#### **3.4.1.1 Infrastructure**

The rail network carries about 180 million tons of cargo annually for both the local and export market. The physical network can be divided into three main categories, namely the primary network and the secondary network (the light and the low-density networks). These networks, as currently defined, constitute 9 800 km, 4 400 km and 5 500 km respectively. In 2003/4, Spoornet moved about 122 million tons of mining cargo. Of this, 95 million tons is bulk export cargo through Richards Bay and Saldanha Bay, whilst the balance of the cargo is regarded as general freight and constitutes 57 million tons per annum<sup>2</sup>.

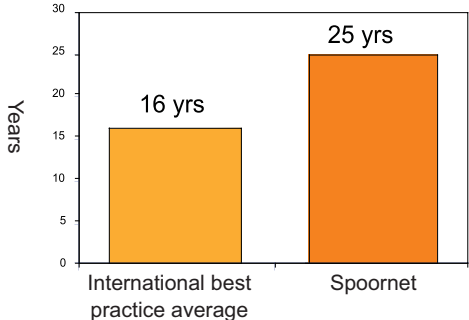
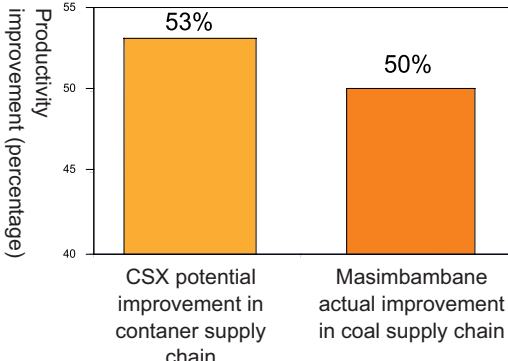
There are two dedicated lines that export iron ore and coal that jointly account for most of the profit that is generated by Spoornet. The rest of the rail business is largely general freight with a lesser amount of traffic on the branch lines. The rest of the rail network (outside Spoornet) is made up of process lines and shunting within private and state facilities, with a small amount of the Spoornet network leased to the private and public sectors for tourist, passenger and freight transport, although this is not too significant at present.

#### **3.4.1.2 Operations**

Although rail in South Africa has retained its market share of bulk products, some of the world's best performing railways have achieved their greatest growth in volumes in container traffic over the past 10 years. This is not the case in Spoornet, which has lost much of this and other higher value commodities to the road freight sector. The main reason is poor operational performance partly due to the poor condition of Spoornet's asset base. As shown in the diagram below, the average age of locomotives is 25 years, whereas the average international norm is around 16 years. This situation also applies to wagons, signalling equipment and the track.

Rail customers who were surveyed expressed dissatisfaction with rail operations and rated rail as significantly below expectations. Customers who use rail do so for goods that are least sensitive to time and reliability. The indications are that many customers have contracted road hauliers to provide services where reliability and time are important. Restoring rail reliability is fundamental, and is the single most important challenge facing the freight logistics sector in South Africa.

<sup>2</sup> Spoornet 2003/2004 Business Plan

| Economic - Asset condition                                                                                                                                                                                                                                                                                                                                                                                           | Customer / Stakeholder                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |          |                                     |                                                     |          |                                                      |                                                                                                                                                                                                                                                                                                                                                                    |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|-------------------------------------|-----------------------------------------------------|----------|------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>Average age of locomotives above best practice</p>  <table border="1"> <caption>Average age of locomotives</caption> <thead> <tr> <th>Category</th> <th>Years</th> </tr> </thead> <tbody> <tr> <td>International best practice average</td> <td>16 yrs</td> </tr> <tr> <td>Spoornet</td> <td>25 yrs</td> </tr> </tbody> </table> | Category                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Years    | International best practice average | 16 yrs                                              | Spoornet | 25 yrs                                               | <p>Customers report rail operations to be significantly below expectations</p> <p>Five most important issues faced by Spoornet customers:</p> <ul style="list-style-type: none"> <li>• Reliability</li> <li>• Equipment availability</li> <li>• Price structure</li> <li>• State and reliability of rolling stock</li> <li>• Rolling stock availability</li> </ul> |
| Category                                                                                                                                                                                                                                                                                                                                                                                                             | Years                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |          |                                     |                                                     |          |                                                      |                                                                                                                                                                                                                                                                                                                                                                    |
| International best practice average                                                                                                                                                                                                                                                                                                                                                                                  | 16 yrs                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |          |                                     |                                                     |          |                                                      |                                                                                                                                                                                                                                                                                                                                                                    |
| Spoornet                                                                                                                                                                                                                                                                                                                                                                                                             | 25 yrs                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |          |                                     |                                                     |          |                                                      |                                                                                                                                                                                                                                                                                                                                                                    |
| Human Resource / Social                                                                                                                                                                                                                                                                                                                                                                                              | Operations                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |          |                                     |                                                     |          |                                                      |                                                                                                                                                                                                                                                                                                                                                                    |
| <ul style="list-style-type: none"> <li>• The cost of labour as a percentage of operating cost is significantly above international best practice and reflects the high number of employees within Spoornet</li> <li>• The skills levels of Spoornet's workforce is poor in a context where railways are becoming less labour intensive and more skills intensive</li> </ul>                                          | <p>Opportunities exist for productivity and efficiency improvements</p>  <table border="1"> <caption>Productivity Improvement (percentage)</caption> <thead> <tr> <th>Category</th> <th>Improvement (%)</th> </tr> </thead> <tbody> <tr> <td>CSX potential improvement in container supply chain</td> <td>53%</td> </tr> <tr> <td>Masimbambane actual improvement in coal supply chain</td> <td>50%</td> </tr> </tbody> </table> | Category | Improvement (%)                     | CSX potential improvement in container supply chain | 53%      | Masimbambane actual improvement in coal supply chain | 50%                                                                                                                                                                                                                                                                                                                                                                |
| Category                                                                                                                                                                                                                                                                                                                                                                                                             | Improvement (%)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |          |                                     |                                                     |          |                                                      |                                                                                                                                                                                                                                                                                                                                                                    |
| CSX potential improvement in container supply chain                                                                                                                                                                                                                                                                                                                                                                  | 53%                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |          |                                     |                                                     |          |                                                      |                                                                                                                                                                                                                                                                                                                                                                    |
| Masimbambane actual improvement in coal supply chain                                                                                                                                                                                                                                                                                                                                                                 | 50%                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |          |                                     |                                                     |          |                                                      |                                                                                                                                                                                                                                                                                                                                                                    |

### Strategic challenges faced by rail <sup>3</sup>

Regarding human resources, the skills levels of Spoornet employees were found to be lower than those of their international counterparts - Spoornet has a much larger component of low-skilled employees. Labour costs and productivity are considerable challenges to Spoornet as the cost of labour accounts for a high proportion of total costs. This makes it difficult to sustain recapitalisation of assets, which requires replacement from existing revenue.

There is considerable scope for enhancing the productivity of rail in South Africa. The graph in the bottom right hand corner of Figure 5 shows the findings of a CSX study, which indicates that there is potential for a 53% increase in productivity. These findings are similar to those of an in-house pilot study called Masimbambane, which has demonstrated that it is possible to improve the efficiency of rail in a coal supply chain by 50%.

On the operations side, Spoornet has suffered significant reductions in capacity to deliver. This has been as a result of a range of factors and cannot be blamed solely on old infrastructure. The startling figures on train cancellations read as much as 60% in some areas. An example to indicate the possible efficiencies still available for extraction using existing infrastructure with new management approaches and limited technology absorption, is the Masimbambane Coal Supply Chain improvement project. Using existing infrastructure with a few modifications to work process and technology, a 50% improvement in reliability and service delivery was extracted. This is capable of application in other areas and supply chains, as the forestry cluster, previously branded as notoriously unreliable and inefficient, was able to extract similar gains. These gains however have failed to be expanded upon and has not been coupled to reductions in cost. No cost gains were passed on to industry, only the reliability gains.



### **3.4.1.3 Regulation**

Spoornet has safety regulatory oversight from the Rail Safety Regulator, with no overt dedicated environmental regulation exercised. The capacity of the regulator is limited at present, and the oversight is mainly targeted at systemic reviews, rather than the effective inspection of operations and infrastructure or personnel. The environmental oversight by the Rail Safety Regulator is not effective. Spoornet does not have economic regulatory oversight exercised over it, other than that in specific areas, such as the determinations as to the rail costs for liquid petroleum products made by the Minister of Minerals and Energy Affairs.

## **3.4.2 Road**

### **3.4.2.1 Infrastructure**

According to the Road Infrastructure Framework<sup>4</sup> for South Africa, about 6 700 km of the road network falls under the jurisdiction of SANRAL, while about 56 000 km are surfaced provincial roads. The unpaved (gravel) provincial road network is approximately 301 000 km in length while urban roads comprise another 168 000 km. Unproclaimed gravel and earth rural roads are about 221 000 km, including access roads.

A road condition assessment demonstrated that more sections of the national network are in very good, good or fair condition than is the case for provincial roads. This state of provincial roads is being made worse by transport operators who do not wish to pay toll fees on the key trunk routes, diverting their vehicles onto provincial roads not designed for such heavy loads.

The busiest freight corridor, Gauteng - Durban, carries 29 million tons of cargo per annum, which is 80% of the total cargo that is moved by road and rail in this corridor. The primary road infrastructure is of very good quality, however when combined with the secondary provincial road network has an index of 38% of roads in the poor to very poor condition compared to an international benchmark of 5-10%. The deregulation of freight transport in the 1980s, coupled with the shortcomings in the rail system caused a migration in cargo from rail to road, which has resulted in high growth in cargo movement by road. The roads are generally perceived to be responding well to the demands of the freight industry i.e. they are flexible enough to accommodate client requirements, have short turnaround times and enable sophisticated transport logistics systems that respond to complex client supply requirements.

While the above may be true in comparison with other transport modes, the road system is facing gradual degradation due to underlying shortcomings of the system. On one hand the investment levels in the road network are estimated to be half what they should be, while on the other, the significant increase in the heavy vehicle traffic volumes on the road networks is shortening the maintenance and rehabilitation cycles of the road network, which in turn increases the burden on the fiscus. Initiatives that have been implemented to curb the practice of overloading on our roads, and the introduction of the user pays principle within the road environment through toll roads, have resulted in an unintended consequence of heavy vehicle transporters circumventing the primary road system by using the secondary road network instead. This road network is not designed for heavy loads and high heavy vehicle traffic exposure and is thus rapidly deteriorating, resulting in efficiency and road safety problems. In addition, due to topographical conditions in certain areas e.g. steep terrain in KwaZulu-Natal, and high traffic volumes in metropolises e.g. Gauteng and Durban, congestion is becoming a serious bottleneck to rapid and seamless freight movement by road.

The road freight industry has externality costs that are currently hidden to the consumer, which if exposed could indicate the potentially serious inefficiencies of road freight transport. For example, road freight movement places a serious fiscal burden on government particularly where heavy vehicle overloading is concerned. The heavy vehicle operators are not paying the corresponding cost of damaging the road network; hence prices appear cheaper than

<sup>4</sup> Road Infrastructure Strategic Framework for South Africa, Draft Report, November 2002

is the case. Secondly the impact of heavy vehicle accidents on both the fiscus and communities has not been accounted for in the costs of road freight transport. Lastly the environmental impact of road based freight transport through emissions and cargo spillages is often not incorporated.

### **3.4.2.2 Operations**

South African road freight operators move about 647 million tons of freight per annum. It is estimated that in tonnage terms 29% is moved by operators for reward, whilst the remaining approximately 69% is moved in-house. Approximately 70 to 80% of freight in South Africa is moved by road because it is more flexible than rail transport. Although it is relatively more efficient, there are still high-level strategic challenges facing this sector as shown in the diagram below.

There is a strong indication that real prices in the road freight industry have declined somewhat since 1992, as is evidenced by an analysis of changes in the prices of two of the biggest ten big road freight companies. This is a consequence of the competitive environment and a result of a decline in real cost per ton km over the last few years made possible partly through technological developments, resulting in higher fuel efficiency. Increased fleet utilisation, technologically improved equipment and the implementation of information management techniques have also contributed to the reduction in prices. The service levels are good and compare well with those of Europe, although the poor condition of the secondary road network is a concern. If not addressed, it will impede performance of the road freight sector in the long term.

The significant social issue that threatens human resources in the road freight sector remains the prevalence and spread of HIV/AIDS. There is evidence that the prevalence of HIV/AIDS is significantly higher among long distance truck drivers than among any other group, although reliable statistics are scarce.

One of the negative consequences of the competitive environment is the long working hours of drivers. This is particularly the case for smaller operators who generally face lower margins and must use their vehicles more intensely in order to remain profitable. The implication of long working hours for drivers is fatigue and increased accidents involving heavy vehicles. The fatal accident rate for trucks has increased from 8 to 10 fatalities per 100 million vehicle kilometres travelled from 1991 to 2000 to 13 to 14 fatalities for the period from 2001 to 2003<sup>5</sup>.

<sup>5</sup> Assessment of National Department of Transport Accident Statistics



| Financial / Economic                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Customer / Stakeholder                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                     |                |              |           |    |      |      |     |      |      |     |      |      |     |      |           |    |                                                                                                                                                                                                                                                                                                                                                                                  |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|----------------|--------------|-----------|----|------|------|-----|------|------|-----|------|------|-----|------|-----------|----|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>Average Price (One Way) - Declining real road freight prices</p> <table border="1"> <caption>Average Price (One Way) - Declining real road freight prices</caption> <thead> <tr> <th>Year</th> <th>Price (Rand/ton.km)</th> <th>Label</th> </tr> </thead> <tbody> <tr> <td>1992</td> <td>0.35</td> <td>B</td> </tr> <tr> <td>1998</td> <td>0.27</td> <td>A</td> </tr> <tr> <td>1998</td> <td>0.26</td> <td>B</td> </tr> <tr> <td>2003</td> <td>0.27</td> <td>A</td> </tr> <tr> <td>2003</td> <td>0.23</td> <td>B</td> </tr> </tbody> </table> | Year                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Price (Rand/ton.km) | Label          | 1992         | 0.35      | B  | 1998 | 0.27 | A   | 1998 | 0.26 | B   | 2003 | 0.27 | A   | 2003 | 0.23      | B  | <p>Customers have high expectations of road freight providers often because they are managing complex supply chains</p> <p>The most important issues faced by road freight customers:</p> <ul style="list-style-type: none"> <li>• Customer service</li> <li>• Industry competition</li> <li>• Inventory management</li> <li>• Labour practice</li> <li>• Fleet costs</li> </ul> |
| Year                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Price (Rand/ton.km)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Label               |                |              |           |    |      |      |     |      |      |     |      |      |     |      |           |    |                                                                                                                                                                                                                                                                                                                                                                                  |
| 1992                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 0.35                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | B                   |                |              |           |    |      |      |     |      |      |     |      |      |     |      |           |    |                                                                                                                                                                                                                                                                                                                                                                                  |
| 1998                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 0.27                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | A                   |                |              |           |    |      |      |     |      |      |     |      |      |     |      |           |    |                                                                                                                                                                                                                                                                                                                                                                                  |
| 1998                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 0.26                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | B                   |                |              |           |    |      |      |     |      |      |     |      |      |     |      |           |    |                                                                                                                                                                                                                                                                                                                                                                                  |
| 2003                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 0.27                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | A                   |                |              |           |    |      |      |     |      |      |     |      |      |     |      |           |    |                                                                                                                                                                                                                                                                                                                                                                                  |
| 2003                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 0.23                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | B                   |                |              |           |    |      |      |     |      |      |     |      |      |     |      |           |    |                                                                                                                                                                                                                                                                                                                                                                                  |
| Human Resource / Social                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Road Infrastructure                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                     |                |              |           |    |      |      |     |      |      |     |      |      |     |      |           |    |                                                                                                                                                                                                                                                                                                                                                                                  |
| <ul style="list-style-type: none"> <li>• The prevalence of HIV/AIDS by drivers of long – distance trucks has reached alarming proportions (estimated to be as high as 50% in SMME sector)</li> <li>• Drivers work longer hours than stipulated leading to fatigue and increased accidents</li> <li>• Lack of practical enforcement measures and insufficient rest areas to comply with safe driver hours</li> <li>• Highjacking and related criminal activities increase overhead costs and impact negatively on driver morale</li> </ul>        | <p>Road condition assessment</p> <table border="1"> <caption>Road condition assessment</caption> <thead> <tr> <th>Condition category</th> <th>Provincial (%)</th> <th>National (%)</th> </tr> </thead> <tbody> <tr> <td>Very good</td> <td>~8</td> <td>~21</td> </tr> <tr> <td>Good</td> <td>~22</td> <td>~31</td> </tr> <tr> <td>Fair</td> <td>~31</td> <td>~32</td> </tr> <tr> <td>Poor</td> <td>~29</td> <td>~13</td> </tr> <tr> <td>Very poor</td> <td>~8</td> <td>~4</td> </tr> </tbody> </table> | Condition category  | Provincial (%) | National (%) | Very good | ~8 | ~21  | Good | ~22 | ~31  | Fair | ~31 | ~32  | Poor | ~29 | ~13  | Very poor | ~8 | ~4                                                                                                                                                                                                                                                                                                                                                                               |
| Condition category                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Provincial (%)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | National (%)        |                |              |           |    |      |      |     |      |      |     |      |      |     |      |           |    |                                                                                                                                                                                                                                                                                                                                                                                  |
| Very good                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | ~8                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | ~21                 |                |              |           |    |      |      |     |      |      |     |      |      |     |      |           |    |                                                                                                                                                                                                                                                                                                                                                                                  |
| Good                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | ~22                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | ~31                 |                |              |           |    |      |      |     |      |      |     |      |      |     |      |           |    |                                                                                                                                                                                                                                                                                                                                                                                  |
| Fair                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | ~31                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | ~32                 |                |              |           |    |      |      |     |      |      |     |      |      |     |      |           |    |                                                                                                                                                                                                                                                                                                                                                                                  |
| Poor                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | ~29                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | ~13                 |                |              |           |    |      |      |     |      |      |     |      |      |     |      |           |    |                                                                                                                                                                                                                                                                                                                                                                                  |
| Very poor                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | ~8                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | ~4                  |                |              |           |    |      |      |     |      |      |     |      |      |     |      |           |    |                                                                                                                                                                                                                                                                                                                                                                                  |

*Strategic challenges faced by road freight <sup>6</sup>*

**3.4.3 Aviation**

The aviation component of this analysis requires significant work. The available information about the industry is largely commissioned by vested and sectoral interests, and is targeted at furthering the particular interests of that component of the sub-sector. The available information from neutral sources is largely systemic and not of a level capable of supporting in-depth analyses. This section therefore attempts to contextualise the sub-sector on the basis of the information that is available and credible, while drawing inferences and support for high level analyses from third party and commissioned work.

**3.4.3.1 Infrastructure**

The state airport network consists of the three key international airports, namely Johannesburg International (JIA), Cape Town International (CIA) and Durban International (DIA) and seven regional airports, namely Bloemfontein, East London, George, Kimberley, Pilanesburg, Port Elizabeth and Upington. South Africa has 500 000 aircraft flights and over 21 million passengers are transported per annum. There are numerous airports that are of a regional or localised importance that have not been the subject of this analysis due to the low levels of internal cargo traffic outside of the major destination pairs.

**3.4.3.2 Operations**

Approximately 522 000 tons of cargo are moved by airfreight each year. This is done by scheduled passenger services as well as by scheduled and unscheduled air freighter services.

<sup>6</sup> Source: Industry Survey, Customer Survey, RFA, CILTSA and DoT – Cabinet Report on Logistics (2003)



Although the highest volume of the world's cargo traffic is handled in the Asia–Pacific region followed by the US, Africa is expected to experience the highest growth in airfreight over the next decade. Johannesburg International Airport is a rapidly growing cargo hub and handled over 270 000 tons of cargo in 2003. This is seven times greater than the cargo handled by next largest freight airport, Cape Town International, and is expected to be the fastest growing airport in Africa. The increased demand for airfreight will put the airfreight infrastructure of JIA under pressure. Currently in South Africa, between 80 and 90% of freight is moved by passenger aircraft and the remainder is moved by both scheduled and non-scheduled freighters. By contrast, in other countries the split between belly freight and dedicated freighter aircraft is roughly 50%. In South Africa, owing to the lack of dedicated facilities for freight, this ratio is high and is expected to remain high. The disadvantage of over reliance on passenger aircraft in the provision of airfreight services is that it leads to poor predictability of available capacity. This is because passengers and their baggage determine what capacity may be available for general airfreight. During busy passenger periods this freight, which often constitutes perishables or urgent high value cargo, may be left behind or “bumped”, which reduces the value proposition to customers. Market forces in combination with investment decisions by ACSA have caused JIA to evolve as the natural hub for airfreight, and it is prudent to continue with this development.

The airfreight market is dominated by perishables and high value exports such as diamonds, mostly originating from South Africa. Imports include high value items such as electronic goods and specialist components. Increasing imports and exports of high value specialist components such as goods for the automotive sector is beginning to dominate this market. International operators are often able to charge less than local operators for services to and from Europe as they exploit a “paid for” return leg to reduce the export cost from South Africa.

| Financial / Economic                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Customer / Stakeholder                                                                                                                                                                                                                                                                                                                                                 |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>• Low returns on investment in freight handling infrastructure at airport at existing hubs and feeder airports discourages investments in freight facilities.</li> <li>• SAA cargo's ability to invest in its business maybe curtailed by the poor performance of SAA's passenger business.</li> <li>• Freight operators registered in other African countries tend to have lower cost infrastructure than South African operators due to the weaker enforcement of safety regulation and levies charged.</li> <li>• International operators are able to charge less than local operators for cargo leaving South Africa as they are exploiting a “paid for” empty leg.</li> <li>• Although the principle of “equal opportunity” is applied in bi-lateral agreements, structural barriers to entry still exist in certain markets (e.g. landing slots at Heathrow).</li> <li>• Slow implementation of the Yamoussoukro declaration to liberalise African Skies.</li> </ul> | <ul style="list-style-type: none"> <li>• Poor reliability of service due the use of belly freight (i.e. bumping).</li> <li>• Lack of scheduled freighter capacity on North / South route due to lack of consistent demand from SA market.</li> <li>• Smaller players tend to experience delays at customs at JIA.</li> </ul>                                           |
| Human Resource / Social                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Operations                                                                                                                                                                                                                                                                                                                                                             |
| <ul style="list-style-type: none"> <li>• Sector needs to implement BEE Charter.</li> <li>• Weak link between the negotiation and implementation of Air Service bi-lateral Agreements to the negotiation and implementation of trade agreements and foreign policy.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <ul style="list-style-type: none"> <li>• JIA productivity levels measured as air cargo throughput per m<sup>2</sup> are significantly less than international benchmarks.</li> <li>• Inconsistent enforcement of regulations (safety, security etc.) within SA and in other parts of Africa allows non-compliant operators to undercut compliant operators.</li> </ul> |

*Strategic issues faced by airfreight*



### **3.4.3.3 Regulation**

The airfreight market within and between South Africa and international markets is characterised by different competitive conditions. Domestic freight is largely confined to movements of scheduled passenger services and is dominated by mail and courier customers. Freight moved into Africa tends to be strongly north bound and is dominated by mining, communication, oil and military customers. Freight operators registered in other African countries tend to have lower cost structures than South African freight operators. This is due to the weaker enforcement of safety regulations in these countries and high levies imposed on South Africa and other foreign operators by certain African countries. Poor enforcement of regulations (safety, security, etc.) within South Africa and in other parts of Africa allows non-compliant operators to undercut compliant operators.

### **3.4.4 Pipelines**

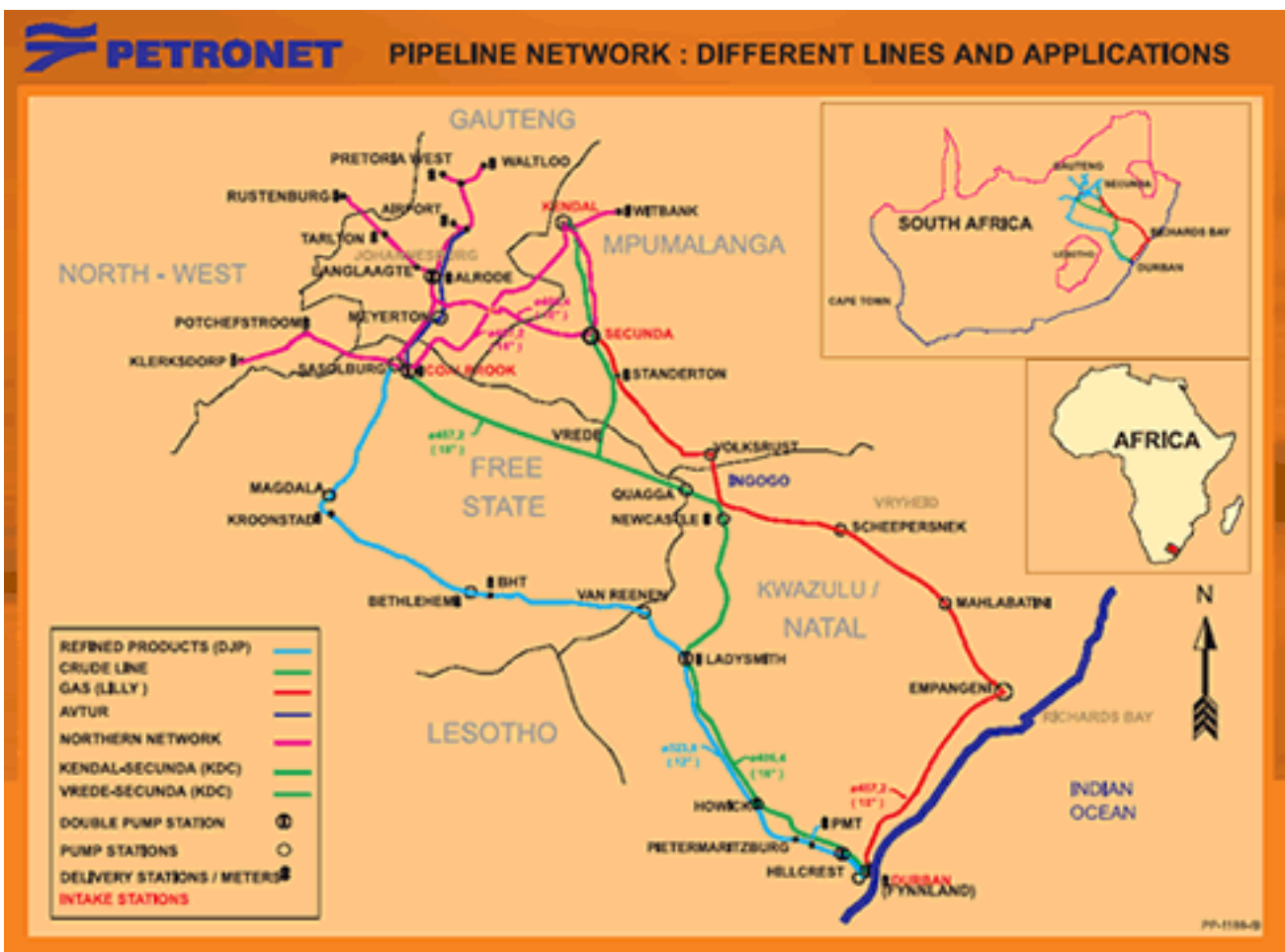
Pipelines provide the track, the necessary support for the cargo concerned and guide the load being transported. In addition they also perform a container or protective function for the cargo being transported. In most cases they transport petroleum and gas products. They can also be used to transport solids by moving the solids in suspension (slurry or paste).

The pipeline industry in South Africa is characterized by the monopolistic position of Petronet, a subsidiary of Transnet. Petronet owns and runs almost the entire network with the exception of one crude oil line from Saldanha to Milnerton (Caltex refinery).

### 3.4.4.1 Infrastructure

The size of the entire network is about 3900 km and majority of the network is on the eastern side of the country because the majority of crude oil exports and refined products come from the Port of Durban, which is on the eastern seaboard. Of the 3900 kilometres of network, Petronet is responsible for 3300km and about 590km is privately owned by Caltex because the line moves from Saldanha to the Calref refinery in Milnerton. This Calref line moves crude oil only. The industry moves about 21 billion litres of fuel per year. Of that, Petronet moves about 16 billion litres and the Calref line moves about 5 billion litres as a dedicated line. The network moves a diverse number of products across its expanse.

From the diagram below, it is clear that pipeline is one of the transport modes that must receive a greater level of attention and analysis, and policy needs to be developed to bring it into the freight transport policy mainstream.



### 3.4.4.2 Operations

Pipelines within Petronet move:

- 16 billion litres of refined products, and
  - Petrols and Diesel 10.3bn litres;
  - Avtur 0.8bn litres;
  - Crude oil 4.9bn litres by Petronet and 5 billion litres by Calref line;
- About 334 million cubic metres of Gas (11,5 million Giga Joules)

### 3.4.4.3 Regulation of Pipelines

Currently the Department of Minerals and Energy plays a regulatory role and the Department of Transport a policy development role with regards to pipeline transport. There is a need for these two departments to engage on issues



relating to pipeline transport. The main areas of regulation relate to the pricing of liquid petroleum product in the pipelines, with the pipeline system falling under the Economic regulatory ambit of the Department of Minerals and Energy. Aspects of the environmental regulation of the pipeline system fall under the different spheres of Department of Environment and Tourism.

### 3.5 Nodes

#### 3.5.1 Inter-modal Interfaces

Intermodal transfers and load consolidation occur at a range of locations concentrated in urban areas and usually at points of modal transfer such as ports, airports and container terminals such as City Deep in Gauteng.

The intermodal interface is poor. Operational issues, poor asset quality and poor customer interfaces result in bottlenecks at the intermodal terminals. This applies particularly to the higher value container and break-bulk supply chain, but is less of a problem at bulk intermodal facilities. Delays occur due to multiple handling of containers, which is exacerbated by inadequate handling equipment and the poor condition of infrastructure at the terminals.

| Financial / Economic                                                                                                                                                                                                                                              | Customer / Stakeholder                                                                                                                                                                                                                                                                |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>• Inefficient intermodal planning</li> <li>• Management issues and allocation of responsibilities not focussed on strengthening integration</li> <li>• Lack of appropriate modern infrastructure and facilities</li> </ul> | <ul style="list-style-type: none"> <li>• Lack of customer service focus</li> <li>• Unwillingness to share supply chain information between customers and operator and between operators</li> <li>• Lack of long-term vision</li> <li>• Lack of value-added services</li> </ul>        |
| Human Resource / Social                                                                                                                                                                                                                                           | Operations                                                                                                                                                                                                                                                                            |
| <ul style="list-style-type: none"> <li>• Poor environmental quality at many intermodal interchanges (e.g. City Deep) is a deterrent to potential investors and developers</li> <li>• Security</li> </ul>                                                          | <ul style="list-style-type: none"> <li>• Inefficient processes (low Productivity) and unreliable services (unpredictability) at key intermodal facilities</li> <li>• Lack of appropriate technology to enable seamless intermodalism</li> <li>• Capacity under-utilisation</li> </ul> |

#### Key challenges concerning intermodal connectivity

In terms of infrastructure, there is a general problem of shortage of capacity that compromises rapid cargo movement, coupled with under investment, and a failure to arrest deterioration resulting from a lack of appropriate maintenance. Certain inter-modal facilities have unique challenges e.g. the City Deep intermodal facility is perceived to be unattractive to potential investors due to its location in an area with bad environmental features. There are also cases of under-utilised infrastructure at inter-modal interfaces coupled with cargo movement delays due to stacking methods.

Operational challenges include poor inter-modal planning, inefficient use of inter-modal facilities and lack of appropriate technology to enable seamless movement. In addition, poor productivity and system unreliability result in poor efficiency in inter-modal processes. What has been found to seriously affect operations however is the apparent unwillingness to share information and coordinate modal processes at inter-modal facilities.

The impediments to inter-modalism include, (1) lack of adequate infrastructure to accommodate double stack rail service in terms of container handling and movements in the country because of the topography; (2) operational inefficiencies at terminals, e.g. City Deep, for managing and tracking shipments, preclearance, scheduling of equipment usage and management of traffic flows; and (3) institutional constraints and relationships with domestic and foreign partner organizations, with conflicting inter-governmental mandates, customs clearance and other governmental data requirements.

### 3.5.2 Border Posts

South Africa has 52 significant border posts. Most of them are small and more than 60% of freight traffic is handled by the top five border posts namely Lebombo, Beitbridge, Oshoek, Nakop and Maseru Bridge. Rail transport remains the dominant mode of transport for cross-border freight movement. However, growth in cross border road freight is currently increasing faster than that of rail.

Efficiency at the border posts is being compromised by a shortage of experienced staff. There are about 45% new appointees, and inadequate human resource development plans. Although service levels vary at each of the five main border posts, which handle mostly freight, the general experience is unsatisfactory. Manual clearing takes twice as long as electronic clearing, but unfortunately the electronic system is not yet fully functional. Facilities have not kept pace with demand at the main border posts.

| Financial / Economic                                                                                                                                          | Customer / Stakeholder                                                                                                                                                                                                |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>Lack of infrastructure to support growing traffic volumes</li> <li>Sustainability of reinvestment</li> </ul>           | <ul style="list-style-type: none"> <li>SADC and international trade on the N1 Northern and Maputo corridors are severely restricted by border capacity constraints during high demand periods</li> </ul>              |
| Human Resource / Social                                                                                                                                       | Operations                                                                                                                                                                                                            |
| <ul style="list-style-type: none"> <li>Critical shortage of experienced staff at border posts</li> <li>Inadequate human resource development plans</li> </ul> | <ul style="list-style-type: none"> <li>Hours of border post operation impacts on supply chain turn-around time</li> <li>Low and inconsistent level of interdepartmental cooperation and system integration</li> </ul> |

#### *Strategic challenges faced by border posts*<sup>7</sup>





The inefficiency at border posts spills over into the freight environment creating excessive opportunity cost in relation to time and costs. The border posts are further constrained in their ability to respond to changes in traffic flow over time as a result of their poor quality resource base. The main causes of the poor quality of the resource base are lack of re-investment, lack of care of assets and a shortage of appropriate skills. This is evident in ports and rail, and also in secondary roads. There is a lack of sustained infrastructure investment at certain border posts.

### **3.5.3 Maritime**

#### **3.5.3.1 Infrastructure**

South Africa has seven commercial ports. The ports of Durban, Cape Town and Port Elizabeth handle mostly container and higher value products, whilst the ports of Saldanha Bay and Richards Bay have a strong primary product orientation. The Mossel Bay port handles bulk liquids while the Port of East London handles containers, bulk, and cars. Coega, a new port in the Eastern Cape, is being developed to handle large vessels, and will have facilities to handle containers and bulk liquids.

Ports are an important element within freight logistics and are therefore of interest to both the public sector and private sectors.

The infrastructure challenges facing the port system are mainly resultant from poor port planning at the design stage in the past, inappropriate land utilisation practices and a failure to invest in infrastructure over the last twenty years. An added complication is the failure to provide appropriate inter-modal facilities that would facilitate seamless movement of cargo across modes at the port land interfaces.

#### **3.5.3.2 Operations**

South Africa exports 122 million tons and imports 39 million tons of products per annum. This difference between the tonnage of exports and imports is largely due to the bulk export of commodities such as coal and iron ore. SAPO is a division within Transnet that operates the ports under its management. NPA is a division of Transnet that provides landlord functions to SAPO and other private operators. Although there are many private sector port operators, the only discernable competition is in break bulk cargo. Most other private operators are in separate markets and do not compete with each other or with SAPO. Examples are the RBCT, Fertilizer terminal in Richard Bay and the handling of all bulk petroleum cargo.

The operational challenges are numerous with the low productivity levels described above being prime among them. The capex backlog and under-investment in port handling equipment and other operational systems, coupled to low human capital development ensures that the problems facing ports are not easily solved just by big bang infrastructure spending. The lack of integration in both virtual and physical links with land based transport and logistics systems has ensured that turnaround times on the land side are not much better than water side. The failure to invest in new technologies and new operations methodologies has ensured that although the ports absorb massive amounts of capital, they seem to face diminishing productivity returns.

The capital expenditure strategy that the ports have adopted is to put in place the necessary capacity for both infrastructure and operations to meet market demands. SAPO's capex is mainly for material handling equipment and NPAs for infrastructure (i.e. immovable assets such as quays, channels etc.). The capital expenditure requirements of the ports sector represent a major challenge in terms of access to capital funds. The capital expenditure requirements of NPA, to meet market demand, include the infrastructural capacity required by SAPO (such as expanding the Durban Container Terminal) as well as infrastructure expansions by ports managed by the private sector, such as Richards Bay Coal Terminal. The NPA capital expenditure for the next five years is estimated at R12bn and that for SAPO is estimated at R5bn.

Infrastructure expenditure is typically higher as compared to material handling equipment and hence NPA's capex requirement is substantially higher than SAPO's. Both businesses are in a position to fund their capex programs on the basis of strong volume growth projections and if profits are not repatriated to the Transnet Group. In this respect it should be noted that concessioning SAPO would not necessarily reduce the high capital expenditure that would be required for a world-class port system since the majority of that capex would be incurred by NPA. However, a concession of certain terminals in SAPO, such as DCT, would go a long way towards improving efficiency and raising funding which could be reinvested in much needed material handling equipment.

Port productivity in South Africa as a measure of efficiency is very low compared with international benchmarks. The Durban container terminal lifts on average 17 containers (TEUs) per hour, whereas the international norm is at least 35 TEUs per hour. From a service point of view, the problem is even more severe due to a huge amount of congestion. The equipment used at most of the container terminals is old and generally in poor condition. Although some newer cranes are in operation at Durban container terminal, the average age of the cranes is about 30 years compared to the international norm of around 20 years.

The lack of competition in port operations has exacerbated the levels of inefficiency and ensured that the levels of port performance are way behind those of ports in comparable jurisdictions. As an example in container terminals, Dar Es Salaam has average crane moves per hour of 21, Namibia has 18 and Brazil has 42, but South African Ports average a mere 13 crane moves per hour. This number must be seen in the context of different operations methodologies, but must also be seen in the context of some of those ports having older infrastructure and less technology absorption than South African Ports. The effects of this inappropriate market structure are to saddle the country with the costs of that inefficiency in lost jobs in the cargo producing sectors, as well as periodic congestion of the terminals with the resultant levying of congestion charges on cargo owners by shipping lines, to the value of up to \$100 per container. In 2001 the cost of inefficiency at Durban Container Terminal alone was estimated at 0,45% of GDP. The lack of integrated planning in port development has further resulted in the ports in South Africa frequently being constrained by private transport peak hours or the port cities being congested by freight traffic into and out of the port.

One of the major stumbling blocks in the South African freight logistics system is the lack of a substantial homegrown fleet of SADC ships that ply both international and coastal routes. At present, only one SOLAS class vessel is registered in the South African fleet. The lack of a fleet that is capable of integrating into the South African supply chains, with substantial economic benefits retained in the SADC freight logistics system value chain, is hampering the establishment of a range of possible options, such as extensive transshipment. The positioning of Coega, as a transshipment centre for the East - West trade routes, particularly between Brazil and India as example, and the North - South route for distribution to SADC will not be possible without a substantial SADC registered coastal fleet. There are various initiatives by Government to support the development of such a fleet. Currently, the margins on shipping are not integrated back into the freight logistics system, either as integrators spends across their chains or as the shipping companies hire and train more SADC residents.

### **3.5.3.3 Regulation**

The overarching issues facing the port are mainly related to the industry structure and regulatory framework. The lack of an appropriate regulatory framework for the ports sector has allowed significant value to be stripped out of the sector to fund non-performing entities in other elements of the transport sector. This regulatory vacuum, in particular in the area of economic regulation has resulted in South African port infrastructure not expanding at a sufficient rate to satisfy the demands of the economy. The extent of value extraction may even threaten the long term sustainability of the port system. The lack of appropriate institutional arrangements to regulate and manage the system has resulted in low levels of efficiency and high pricing.



The implementation and promulgation of the National Ports Act and the high cost of port logistics are related issues. If the Act is rapidly implemented, National Ports Act would be able to reform its tariffs and pass some of the benefits of the reform on to the users of port services. Subject to the financial needs of Transnet, NPA could also re-invest a significant proportion in much needed infrastructure based on current revenue streams. At present the imbalance in the tariffs between SAPO and NPA primarily funds non-performing businesses in Transnet.

### **3.5.4 Traffic Consolidation and Deconsolidation Facilities**

An area that requires further information and clarity relates to distribution centers, warehouses and marshalling yards. The strategy would have to further capture the status quo of the aforementioned areas as they have a major impact on traffic flows and efficiencies. Warehousing facilities in some cases do not have sufficient capacity, and additional storage has to be sought in areas further from the inter-modal facilities, which clearly adds to the handling time.

#### ***Distribution Centres***

Distribution centers are privately owned and are dislocated from transport interchanges, which make it difficult for integration into the road transport system, especially when future expansion is to be considered. The current lack of integrated planning, particularly in spatial development planning and design, results in the facilities being developed in such a manner that they contribute to congestion and costs, including the costs faced by workers traveling to and from such facilities, although they make sense on firm level. This area of work, because of its fragmented and localised character demands micro level analysis with specific optimisation approaches.

#### ***Marshalling yards***

Marshalling yards are generally owned by Spoornet, and on many occasions consignments are delayed because of the inefficient operations at these facilities, which impacts on the flow and costs of logistics.

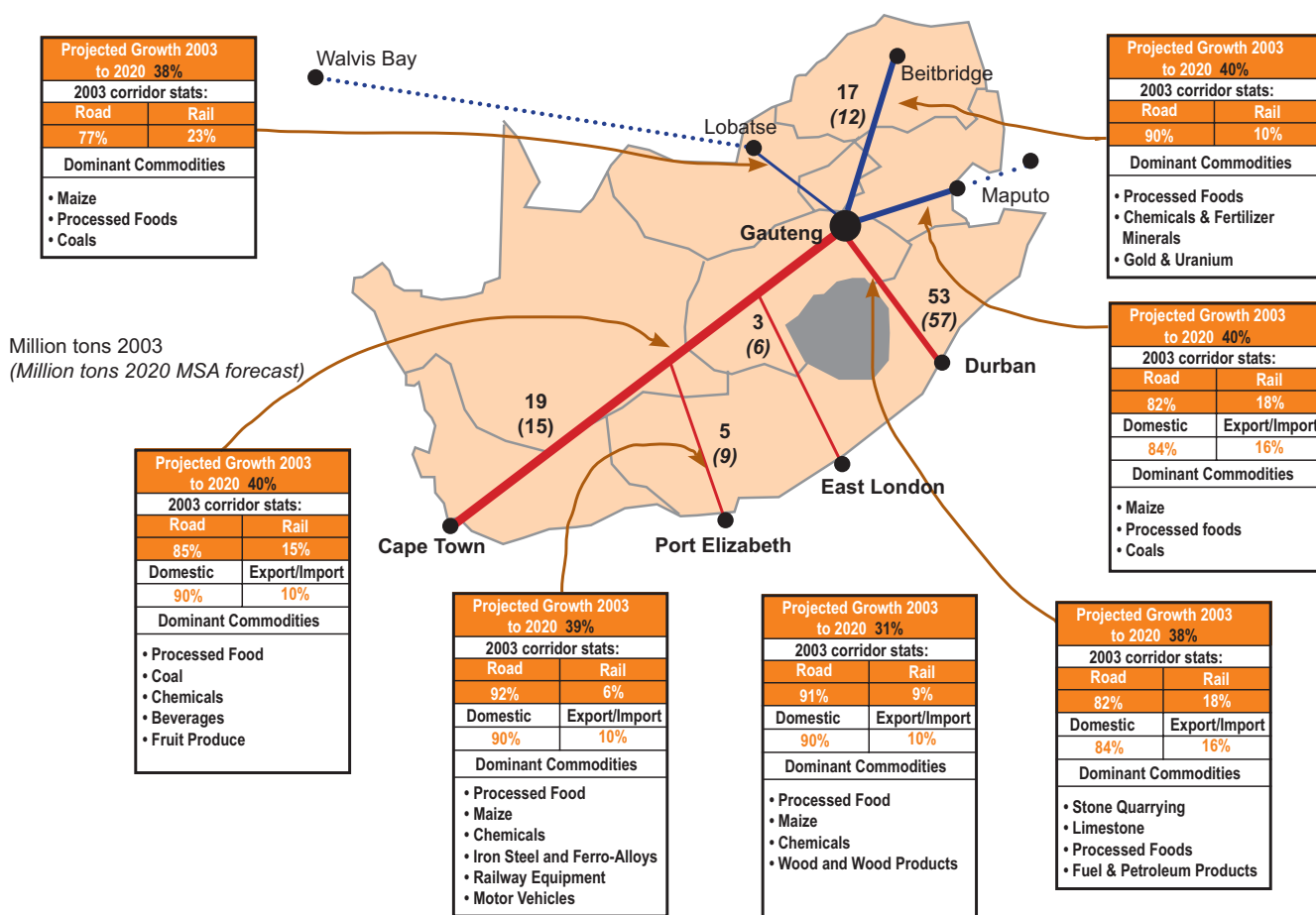
#### ***Airports***

Whilst investments at Johannesburg International Airport (JIA) will further solidify its position as the dominant international freight hub, low returns on investments in freight handling infrastructure at existing airports discourages investment in freight facilities. South African airports have limited airlift handling capacity and integration into the road and rail network is constrained or difficult. The expansion of airports could be curtailed by the limited land available in surrounding areas as a result of skewed spatial development planning by municipalities.

Airlines tend to be passenger focused. This reliance on a high proportion of scheduled passenger services leads to lower overall reliability of airfreight in particular due to the risks associated with “bumping”. In addition, smaller players tend to experience customs delays at JIA, which are not commensurate with the focus of airfreight, which offers a high-speed, high cost freight service.

### 3.6 Corridors

Gauteng continues to sustain its role as the main business hub of South Africa. South Africa has 7 primary corridors, which dominate the region and have almost surpassed the MSA's 20 year projections, 16 years earlier than expected. This indicates not only the impact of economic growth since this time but also the enhanced reliance on trade, both global and domestic, as an intrinsic part of changes in the national economy.



#### Corridor volumes – current and projected

Future projections from 2004 for the next ten years show that there is a range of capacity shortfalls from a corridor perspective. Two national corridors, Gauteng - Durban and Gauteng - Cape Town, stand out as requiring special attention. In volume terms these corridors carry significantly more than any of the others and are therefore critical to the national economy. Two SADC corridors, Gauteng - Beitbridge and Gauteng - Maputo stand also out as requiring more attention than the others. While the Gauteng - Lobatse - Walvis Bay corridor is important it does represent a relatively lower priority in the short to medium term.



### 3.6.1 The Gauteng - Durban corridor

The following strategic issues facing this corridor are urgent and require immediate attention:

- the required capacity for the Gauteng - Durban corridor was projected by MSA to reach 57 million tons in 2020,
- the corridor is already close to this capacity (53 million tons in 2004, 16 years sooner), and is expected to have grown by 38% by 2020. To make matters worse, less than 20% of the goods transported along this corridor can be switched to other ports, implying that 80% of the goods destined for Durban are for local consumption. This has serious implications for the sustainability of this corridor. Alternative corridor strategies are required to prevent a bottleneck in the immediate future. Additional capacity will be required on this corridor to cater for local demand irrespective of whether cargo can be switched or not,
- furthermore, the operational capacity of rail is estimated at 20% of the installed capacity and is further challenged by a lack of, effective infrastructure, trained people and a closer alignment to customer needs. If nothing is done now, and considering the projected growth of 75 million tons in 2020, there will be a capacity bottleneck of about 21 million tons (75 million tons projected versus the current 54 million tons carried),
- rail delays, predominantly at the marshalling yards leading to the port of Durban and City Deep, impact negatively on rail's competitiveness,
- different electric currents require four locomotive changes, which increases operating cost and transit times,
- asset age reduces efficiency:
  - of ports, particularly the container terminal,
  - of rail, particularly of rolling stock and at City Deep;
- ship delays and waiting times have obvious adverse impacts on logistics costs and reliability,
- the forecast port capacity will be unable to deal with 2020 volumes,
- traffic is not evenly balanced – two-thirds full on the down run and one-third full on the back haul, although there may be variations between commodities.

### 3.6.2 The Gauteng - Cape Town corridor

The following strategic issues facing this corridor are not as urgent as those facing the Gauteng - Durban corridor:

- of the 19 million tons of freight transported on this corridor, less than 3 million tons is switchable to another port, which implies that high volumes of goods are transported for local consumption,
- unlike in Durban where immediate port expansion is required, some expansions in the port of Cape Town will be required between now and 2020. The port of Cape Town has the potential to evolve into a specialist port with the emphasis on fruit export,
- very low utilisation of rail capacity,
- road corridor capacity is constrained in places by single lanes,
- the opportunity to use rail as line haul and integrating road freight as a feeder service is being limited by poor rail reliability,
- locomotive changes impact adversely on reliability, transit time and the operating cost of rail.

The corridor is more directionally balanced than most other corridors. However, rail's performance gap will have to be closed to avoid the road corridor from filling up completely. Rail is the cheapest infrastructure solution to providing alternate corridor capacity by road. Given the nature of the commodities transported on the corridor, a significant portion could be containerised by 2020, thereby lending itself to intermodal solutions.



### 3.6.3 High-Level Gaps in the Dominant Regional Corridors

#### 3.6.3.1 Gauteng - Beitbridge Corridor

The concern with respect to this corridor is that South Africa is not geared to handle growth in freight volumes. A revival of Zimbabwe's economy and a continuation of Limpopo Province's current growth means that capacity could well be exceeded before 2020. The key issues facing the SADC northern corridors are:

- capacity at border posts during peak periods is a major challenge particularly at Beitbridge. In the case of freight moving beyond Zimbabwe the border post challenge becomes more significant,
- high-value north-bound traffic is not balanced by returning back-haul traffic which results in higher overall transport costs to the SADC region,
- poor enforcement of over-loading by SADC countries has a negative impact on road condition in the provinces that border on neighbouring countries.

#### 3.6.4 Gauteng - Maputo Corridor

The key issues facing the SADC corridor from Gauteng to Maputo are:

- few ship calls and the absence of a scheduled container service at the port of Maputo limits freight growth,
- draught limitations restrict the possible use in future of larger vessels at the Port,
- capacity at border posts particularly during peak periods is limited,
- the poor condition of rail infrastructure and almost no rail traffic to the port of Maputo limit the use of rail on the Maputo corridor.

However this corridor remains important given the growth of traffic on this corridor, thus giving it potential for further growth.

## 3.7 Freight Infrastructure and Operations Conclusion

The quality of infrastructure in the freight logistics sector is insufficient to sustain a world class logistics system. The operations on that infrastructure is further, not targeted at fulfilling demand, but rather at tailoring demand around the supply structures and constraints.

The funding of national roads, although below the levels necessary to sustain all roads in good condition, is the only part of the industry to practice sustained re-investment in infrastructure, through a fiscal allocation of R900 mill per annum and R5.2 billion private sector investment in toll road concessions. Airport infrastructure necessary to move airfreight has also improved considerably over the last decade.

Secondary roads and assets and infrastructure in ports and rail have however attracted very low levels of investment and the condition of this infrastructure now remains a contributor to inefficiencies in freight logistics and an impediment to national competitiveness.

In rail and ports asset care and renewal of moveable assets such as rolling stock, cranes, etc represents a significant challenge and under investment in assets contributes to poor reliability and inefficiency. In road freight, asset care remains a problem for the many smaller road freight providers and contributes to poor road safety. For the larger road freight operators levels of asset care have improved over the last decade, as is evidenced by the decreasing average age of vehicles owned by larger road freight logistics companies.



The poor quality of the underlying resource base contributes to a lack of integration, particularly between the different modes, and this exacerbates inefficiencies in the sector. As a result the benefits of integration are being lost through reductions in reliability and an increase in cost to customers.

At corridor level this situation results in:

- insufficient investment in infrastructure to cope with growth in the demand for freight traffic,
- a rail system characterised by poor levels of efficiency and reliability that results in more goods being moved by road,
- port and airfreight systems that do not provide the necessary capacity to deliver a cost-effective and reliable service to customers,
- high growth of heavy vehicles (some of which are overloaded) using a secondary road network not designed or maintained to a standard sufficient to support such traffic.

This situation is particularly prevalent on the dominant high value export corridor from Gauteng to Durban, but also to a lesser extent in other locations such as between Gauteng to Cape Town, the rail system to Maputo, the secondary road networks of provinces such as Mpumalanga, airfreight capacity at certain regional airports, to name but a few.

| Ports                                                        | Rail                                                 | Road                                                           |
|--------------------------------------------------------------|------------------------------------------------------|----------------------------------------------------------------|
| <i>Aged equipment</i><br>30 vs 20 years for cranes           | <i>Rolling stock</i><br>Average age 25 vs 15 years   | <i>Infrastructure</i><br>Poor condition of secondary roads     |
| Border Posts                                                 | Air Freight                                          | Intermodal Interface                                           |
| <i>Capacity</i><br>Facilities have not kept pace with demand | <i>Airports</i><br>Cargo handling capacity shortfall | <i>Poor Local Environment</i><br>Inadequate handling equipment |

Requires significant intervention    Requires little intervention



### Asset quality across the freight logistics sector

## 3.8 Cross Cutting Issues

### 3.8.1 Technology

Currently information is scattered across the transport sector rendering it difficult to determine traffic flows as a result of weak technology integration. This creates problems for industry role players to determine how the sector is performing especially to determine how fast or slow the sector is growing. There is a dire need to enhance technology to ensure that real time information is systematically captured.

The Department of Transport is in a process of finalising the national freight data bank. The Kwa-Zulu Natal and Gauteng freight data have been incorporated into a National Freight Databank. The Department of Trade and Industry is in a process of finalising its National Corridor Performance Management (NCPM) tools. This will be followed by the integration of the two aforementioned systems. The need to provide a platform for an integrated logistics system is to enable industry role players to access the information for their planning and decision making requirements. Currently this level of integration is only taking place on the firm level, and it needs to be further enhanced or developed.

### 3.8.2 Personnel

#### 3.8.2.1 Skills

Within the freight logistics sector the area of skills has largely been ignored in the context of the fundamental changes occurring globally across the industry. TETA and other institutions have concentrated on developing the base level skills of drivers and the like, which measures, although important, only target existing deficits in the sub-sector and transformation requirements for dealing with current equity issues. The major gaps are in the value adding skills of the industry and in basic skill sets in new and emerging technologies and practices. Most analyses have focused on one or two aspects of a supply chain or mode, without a total system level analysis.

A decrease in the demand for unskilled and low skilled labour with a concomitant increase in demand for skilled and, more recently, highly skilled labour within companies across all sub-sectors of the transport sector has been confirmed in a recent study .

The general trends in the supply or provision of training across the sub-sectors can be summarised as follows:

- HET provision exists in the transport sector, but appears to be driven by a traditional transport mode modular approach, which does not conform to the global trend focussing on supply chain and logistics at a high level
- there appears to be no interface (information dissemination) between supply and demand in terms of the skills needed in the market and their relevant provision.

Across the sub-sectors the common skills identified as lacking include:

- e-commerce skills (high level),
- data management and interface solutions,
- piloting skills (for the new airbus fleet),
- senior aircraft maintenance engineering skills,
- logistics and supply chain management skills (high level, with MBA or MBL),
- customer-centric driving skills (for the tourism bus sector),
- air conditioning technical skills,
- route scheduling and planning,
- supply chain distribution, skills and
- new technology skills applicable to supply chain distribution centres.

A strategic overview of these modes indicates a misalignment between the current skills base and the skills necessary to provide the value required by customers. Transport, together with the other components of logistics management, is vital to the level of service a company provides to its customers. Transportation has a particularly significant impact on customer services. As reflected in the Empirical Study, which investigated the eight sub-sectors of the transport sector, customer service is the key factor contributing to the bottom line. If South African companies are to be globally competitive, they should shift the focus of service excellence in the logistics sector from internal stakeholders to



external customers. This requires a more sophisticated understanding of a company's own business and that of its clients. This will not be possible without a shift in the skills base.

As the strategic shifts proposed by this strategy take effect, additional skills will be needed to support the reform process. These skills include particularly the ability to perform regulatory functions, to enhance the private sector's role in the operational environment, to increase the levels of collaboration between different players and to technically enhance the asset base across the sector. These skills have both a strong business and a strong technical focus.

Further skills analysis within the sector, conducted with the skills necessary for sector reform in mind, will be a prerequisite for identifying a programme of action to enhance skills levels. The results of this skills analysis can be used to inform skills development planning and interventions. Strategic partnerships should be established with skills-development institutions to enhance and fast track the development of appropriate skills. This may take the form of learnerships driven by TETA as well as centres of excellence driven by DOT and DTI.

### **3.8.3 BEE and Employment Equity**

The varying levels of transformation and transformation processes achieved in the different sub-sectors of the freight system makes the ingress of transformation into industry value chains difficult to assess. The ingress of BEE has mainly been in the low value or high equity cost components of the system. Some successes have been filtering through in various sub-sectors, but as yet major transformation is elusive.

The maritime sector committed itself to BEE in 2003 by signing a BEE scorecard, which focussed particularly on ownership, employment equity and skills development. The road freight sub-sector is particularly geared towards SMME development, which however is only visible in road haulage, and then mainly in low value-adding or low margin business.

## 4. VISION OF AN IDEAL STATE

### 4.1 Policy Context for the Strategy

A vision for freight transport is found in the White Paper on National Transport Policy. This vision is premised on the following mission statement:

*“To provide safe, reliable, effective, efficient and fully integrated land freight transport operations and infrastructure which best meet the needs of customers at improving levels of service at an equitable cost in a fashion which supports government strategies for economic and social development while being environmentally and economically sustainable.”*

The development of South Africa depends primarily on its ability to move goods and deliver services to their destinations with speed and reliability, without failure and fear for their safety. It will also form part of Government's measures to address the pressing social ills, including poverty and rural underdevelopment, resulting from high levels of unemployment.

The measures taken to develop South Africa and raise the standards of living of our people should not compromise the future sustainability of our environment and natural resources. The movement of goods and services, particularly by road, is already a problem because of exhaust emissions, congestion and other environmentally unfriendly results of economic practices.

The development of a strategic framework for land freight transport depends on three key areas, namely economic, social and environmental objectives. These objectives seek to balance current market, social and environmental dynamics, and so demand that Government address the seamless movement of goods and services across the breadth of this country and cross border. The economic, social and environmental objectives will be examined in turn.

This White Paper on national transport policy was developed according to certain macro-economic objectives set out by the government as prerequisites for attaining the principles embodied in several key documents, including the Reconstruction and Development Programme, the Gear Strategy, the White Paper on National Transport, the Moving South Africa Strategy and the White Paper on National Commercial Ports Policy. These objectives are:

- re-evaluation of the role of freight transport in economic development;
- lower transport costs;
- efficient transport systems;
- infrastructure development;
- promotion of BEE;
- safety of goods in transit;
- development of strategic transportation corridors;
- promotion of intermodalism;
- reduction of control overloading;
- promotion of Small Medium and Micro Enterprises (SMMEs);
- removal of infrastructural bottlenecks; and
- trade facilitation and co-ordination.





These economic objectives are underpinned by certain principles, namely that:

- freight drives the economy;
- freight is the engine for economic growth; and
- freight must be accessible to international markets.

The implementation of these principles, with measures such as trade facilitation and co-ordination, should create an environment conducive to the movement of goods and services in the country.

Classic macro-economic theory suggests that a productive infrastructure, including transport assets, is one of the key preconditions for national economic growth. The theory holds that by investing in assets like bridges, roads, ports or even telephone lines, a nation can stimulate development by reducing transport and communications costs, thus facilitating further trade and wealth creation.

This macro-economic theory, applied to the South African and indeed the African context, highlights the fact that freight logistics can be an engine of growth and a guarantee of continental integration, both internally and within the global economy. As a result, freight logistics is not only an industry in itself but also supports other key micro-economic growth sectors and the development of individual industries within these sectors.

In South Africa, the freight logistics industry has developed rapidly since the deregulation of the transport industry and the introduction of progressive macro-economic and micro-economic reforms beginning in 1994. These reforms have helped the freight logistics industry in South Africa develop in response to global trends in international trade logistics. The industry employs many people globally and accounts for a substantial number of jobs in South Africa. Globally and in South Africa the industry aims to promote supply-chain and export competitiveness.

Key to the development of the industry is the support that freight logistics gives to other government policies aimed at improving the standard of living of our people. These policies are, among others:

- the Reconstruction and Development Programme;
- the Growth, Employment and Redistribution Strategy;
- the Industrial and Development Strategies;
- the Manufacturing Strategy; and
- the Agricultural Strategy.

In addition to these economic objectives, the government has to achieve important social objectives. These objectives do not compete with but rather complement the economic objectives already discussed, aiming to achieve social justice and economic development through participation by all in the economic mainstream. These social objectives are spelt out in the Reconstruction and Development Programme and other government policies. They include:

- meeting basic needs;
- alleviating poverty;
- creating jobs;
- developing human resources; and
- improving access of rural producers.

These objectives are underpinned by the important principles of:

- social development;
- sustainable economic growth and development; and
- equitable access.

The third group of objectives are environmental objectives. These complement the economic and social objectives, requiring the government to protect the environment and respond to environmental deterioration as a result of emissions and congestion. The environmental objectives are drawn from the Department's Environmental Implementation Plan and Sustainable Transport Strategy. These objectives are to:

- reduce congestion;
- reduce infrastructure damage;
- reduce exhaust emissions; and
- reduce external items like accident costs.

#### 4.1.1 The Policy Environment Informing Freight Logistics

This section provides an overview of the policy environment informing the formulation of a National Freight Logistics Strategic Framework. Any policies and/or strategies addressing freight logistics must be consistent with and compliment Government's wider developmental, economic, social and political objectives. Although transport is the most critical element in the freight logistics system, broader government policies are considered, so that a holistic approach to freight logistics can be developed. The following are some of the more salient policies and strategies that had an impact on the development of this strategy:

##### **The Constitution of the Republic of South Africa**

- **Policies of the National Department of Transport:**
  - White Paper on National Transport Policy,
  - White Paper on National Commercial Ports Policy,
  - White Paper on National Policy on Airports and Airspace Management,
  - Moving South Africa: The Action Agenda,
  - Road Traffic Act,
  - National Land Transport Transition Act and
  - National Land Transport Strategic Framework;
- **Policies of the Department of Public Enterprises:**
  - An Accelerated Agenda Towards the Restructuring of State Owned Enterprises;
- **Policies of the Department of Trade and Industry:**
  - Accelerating Growth and Development: the Contribution of an Integrated Manufacturing Strategy (IMS),
  - Integrated Industrial Strategy,
  - Microeconomic Reform Strategy,
  - Motor Industry Development Plan and
  - BEE Strategy;



- **Policies of the National Department of Agriculture:**
  - A Strategic Plan for South Africa Agriculture; and
- **BEE Commission Report.**

The strategy sets out Government's intention of making freight transport central to the economic development of the country. As mentioned above, freight transport in particular, and freight logistics in general, is becoming increasingly important in the movement of goods and services in the country. Trying to put the need for freight logistics in context, Government has to look at the critical transport modes and factors that would make possible the seamless movement of goods and services in the supply chain.

The Department of Transport's strategy on freight logistics is based on two main documents, namely, the White Paper on National Transport Policy and the Moving South Africa Strategy (MSA). These two documents set out the role of freight movement in improving and advancing economic development. Although some elements of these documents have become less relevant over time, their fundamental thrust remains critical to the development of a freight system that supports the economic development of South Africa.

The seamless movement of freight across all modes is a challenge with which South Africa is forced to grapple in its efforts to increase exports and be competitive in the global market. The core of this challenge that is facing South Africa and the region is the need for infrastructural investments that will make effortless the movement of goods and services in the country and the region. The infrastructure needed for this effortless movement is not only transport facilities, but also information and communications technology (ICT), warehousing and distribution.

The movement of goods and services in the supply chain involves costs. These costs are but one of the many elements in the chain that determine whether or not our local export companies are competitive in the international market environment. At the meeting of transport ministers in Addis Ababa in March of 2002, transport costs were raised as the main impediment to the competitiveness of African companies in the global trading environment. Therefore, cost is a critical element among the many components of the supply chain and still remains an issue in South Africa. African transporters must resolve this problem if local and continental companies are to be able to compete, and so, in the long term, ensure the necessary development required to improve the living conditions of the peoples of Africa. The transport objectives of the Millennium Development Goals clearly cite the reduction of transport costs as a requirement, in particular in relation to rural communities and producers, and to landlocked countries dependent on their neighbors for efficient transport systems. The Almaty Programme of the African Union further stresses the need for transit countries such as South Africa to reduce the freight costs unavoidable for countries such as Botswana, Lesotho, Swaziland, Zambia and Zimbabwe.

Before freight logistics can be defined and the role it plays in the economy set out, the underpinning concepts of freight logistics must first be defined, to allow a clear examination of the role each mode plays in the transport chain and other supporting activities, such as warehousing, storage and distribution, that are crucial to the movement of goods and services. The following are concepts that put in context the need for and role of freight logistics:

The former Institute of Logistics and Distribution Management provides a concise definition: "Logistics is the management of the entire supply chain".

The European Logistics Association defines freight logistics as "the organisation, planning, control and execution of the goods flow from development and purchasing, through production and distribution, to the final customer in order to satisfy the requirements of the market of minimum costs and minimum capital use".

From this definition it is clear that freight logistics involves three critical areas:

- seamless movement of goods and services from production to distribution;
- minimizing of transportation costs; and
- the role of capital use, either infrastructure or capital equipment.

The American Council for Logistics Management defines freight logistics as “the process of planning, implementing and controlling the efficient, cost-effective flow and storage of raw materials, in process inventory, finished goods, and related information from point-of-origin to point-of-consumption for the purpose of conforming to customer requirements”.

This definition suggests that four elements are crucial to an efficient transport and logistics chain, and that transport is but one of them. These four elements are:

- cost effectiveness and efficiency;
- warehousing and storage;
- information technology; and
- customer satisfaction.

As these definitions imply, the role of freight logistics in a country’s economy is both central and complex. This role can be set out in more detail:

- globally, freight logistics is regarded as fundamental in promoting national and regional economic development. As a result, some of the most developed countries in the world, such as Canada, Germany, the Netherlands Singapore and the U.S.A, have invested in the most advanced freight logistics systems and technologies available. Less developed countries of the world are increasingly turning to freight logistics as a means of achieving greater economic growth, and positioning it at the centre of their economic development plans. The contribution of freight logistics to commodity and product-trading is internationally acknowledged as one of the reasons for the economic prosperity, sustainable development and competitiveness of more developed countries,
- from a regional economic perspective, freight logistics has been recognised as a means of achieving the integration of regional economies, via the harmonisation of transport systems,
- freight logistics has contributed to the economic growth of regions, as part of regional growth and development plans and international trade agreements such as NEPAD, SADC, the Protocol on Transport, Communications and Meteorology, MERCUSOR and AGOA,
- various commodities, goods and services are traded as cargo and freight out of South Africa for export to the SADC region, the rest of Africa and other continents of the world, and imported into South Africa from these and other regions. This movement of cargo is highly reliant on freight transport and freight logistics services. In order to ensure the supply chain competitiveness of these commodities, products and services, highly reliable, speedy and flexible freight logistics operations and freight transport services are required.



This understanding of the role of freight logistics implies for Government and state institutions in managing the freight logistics system:

- Government has a direct role to play in the development of the freight logistic industry in South Africa and its associated spin-offs. To this end Government can use a number of levers to facilitate the freight logistics sector. These levers include national Government policies, strategies, legislation and programmes; state-owned enterprises involved in freight logistics; international bilateral agreements and alliances with labour and cooperation with the private sector,
- Government must seek to promote export competitiveness via productive and efficient freight transport infrastructure, while adding value and creating competitive supply chains, but not at the expense of internal logistics, which tends to impact quite heavily on the cost of living. A balance must be found between the cost of doing business and the cost of living,
- Government's mandate is to facilitate freight transport's role as an input sector, to promote the seamless movement of commodities, products and services along supply chains in an efficient, sustainable and value-adding manner,
- Government must take a more strategic and interventionist approach to implementing freight policy and strategy dictates in the freight logistics system. Freight transport policy should collaborate with other national strategies and policies that rely on freight logistics. Freight logistics must be promoted as an increasingly important means of achieving macro and microeconomic growth through increasing economic efficiency, facilitating trade and improving export competitiveness.

The process of integrating the elements and activities in the supply chain falls under logistics management. The provision of appropriate freight transport infrastructure of good quality makes possible efficient supply chain management and the optimisation of the flow of goods, materials, information and other resources of enterprises. Thus supply chain management and freight logistics are inseparable concepts and, consequently, the promotion of freight logistics in the context of freight transport policy requires a focus on supply chain management issues.

Our vision is a transport sector that contributes to sustainable socio-economic growth and development. The Government sees a transport system that promotes access by rural producers of goods and services to international and national markets whilst promoting and maintaining supply chains focused on the first economy and on export and high value. Transport should contribute to South Africa's socio-economic development in the short, medium and long term, through significantly reducing logistics costs which will then reduce the cost of living and of doing business and through increasing system capacity. Improved transport logistics are also vital in eradicating systemic and operational bottlenecks in the country and more widely on the African continent. These impediments to continental economic and transport integration need to be addressed by 2015 if we are to comply with the strategic requirements of the Presidency and multi-lateral obligations.

A fundamental change in current practice is needed: Government has to play an active role in integrating planning, delivery and assessment in the freight system. The Department of Transport needs to integrate freight system planning and implementation across the public and private sectors, and provide a context for resolving gaps between forecast demand and planned capacity, and misalignment between the various desired outcomes of all parties in the planning and implementation of the freight system. Appropriate governance and integration structures and processes need to be developed and implemented to ensure that existing planning and/or delivery misalignments are resolved, as well as ensuring that future planning and delivery is better integrated.



## 4.2 Principles

### 4.2.1 Ownership of Infrastructure

Transport infrastructure consists of those facilities and associated systems, generally of a fixed and immovable nature, that provide a platform for economic and social activities or operations. It includes roads, airports and rail tracks, including marshalling yards, seaports, dry ports and associated facilities. Transport infrastructure can be developed and maintained by the public and/or private sector, and is provided to serve the public interest in pursuit of socio-economic objectives or to serve specific economic or social interests. Infrastructure normally requires large investment capital and ongoing operational investment and is subject to value depreciation over time.

Globalisation has had a strong influence on public policy in terms of removing trade barriers and facilitating economic growth. In many countries, these changes have also necessitated rethinking of national freight strategies to align these strategies with the needs of national competitiveness. In almost all cases, this has produced far-reaching reforms in the legislative, regulatory and institutional environments. Private sector firms generally play a dominant role at the operational level, both competing and interfacing with one another on a day-to-day basis, while the public sector defines the characteristics of the freight logistics system and frequently retains ownership of the infrastructure.

The vision is for the Government to retain the majority of ownership of critical infrastructure, and to remain responsible for network development and management. The total infrastructure architecture will therefore consist of a state infrastructure utility, SOEs and private sector entities that own and operate infrastructure. Some infrastructure components should be held and managed by a state agency that operates on a utility basis under a long-term network sustainability rather than a commercial mandate. Other infrastructure components should be held in commercialised SOEs that retain certain socio-economic and strategic obligations. A framework that ensures a level of private infrastructure ownership and management is critical, as equity investment in infrastructure by the private sector will ensure the development of a larger infrastructure pool than that of SOE balance sheets and Government transfers alone. The object of separating infrastructure from operations is two fold: firstly, to create a model which allows for improved funding of infrastructure through a well-defined transparent revenue stream, and secondly, to create the scope for new private sector players to compete on a level playing field by having access to shared infrastructure. The infrastructure utility will have no role in operations on infrastructure or any corporate relationship with operations entities whether public or private. Where an opportunity exists for private sector ownership, and the prevention of market anomalies can be ensured by the regulatory regime, the private sector should be allowed to own, operate, and particularly develop new infrastructure and rehabilitate existing infrastructure in bad condition. The private sector should have a clearly defined regulatory framework that offers incentives for their risk and defines operational and ownership parameters. The socio-economic development obligations imposed on the state infrastructure utility cannot be imposed on these private sector infrastructure owners, but the design of the concessions, or whatever model is used for their involvement, needs to consider impact on socio-economic development.

This policy gives Government the strategic custodianship of future infrastructure development and ensures strong developmental and strategic responsibility as well as sustained reinvestment in infrastructure. It also allows for a user pays approach to the use of infrastructure, which, with direct Government financing and some cross subsidisation on infrastructure usage costs, will support wider social objectives. Government may involve the private sector in situations where PPP ventures represent viable strategies to develop or sustain infrastructure. This does not completely exclude the possibility that, where appropriate, the ownership and management of infrastructure can be in private hands, as some critical infrastructure has a defined customer base that makes it suitable for management as a non-common user facility. However, this should be the exception rather than the rule, and should be accompanied



by strict regulations ensuring that market anomalies are not created. A case in point is the Richard's Bay coal terminal which, although it is very efficient, prevents the utilisation of the terminal. The terminal is supported by significant public investment in port and rail by producers outside the cartel, but at rates that are not sustainable, particularly to small BEE operators. Another problem is that rail investments have often been targeted at facilities like this, at the expense of other investments with lower revenue and profitability levels but larger impact on economic growth development.

Cross subsidies will be used to fund infrastructure outside the high volume sections of the network, and may also be used to promote access by smaller and more marginal players, particularly in regions with high developmental benefits. To promote transparent and well managed cross subsidisation, each infrastructure provider will fund a common "developmental pool" from charges to commercial operators. The pool will be used to cross subsidise infrastructure and operations that are not commercially viable but are identified as in the national interest. The size of the pool will be established through the freight sector investment plan and may be supplemented by direct government fiscal allocations.

Government is generally better placed than the private sector to perform an infrastructure provider role, as it is able to actively promote the following objectives:

- to manage the prices charged for using infrastructure in a transparent manner which will encourage good business practice by operators and promote sustainable re-investment in infrastructure;
- to sustain, manage and develop public infrastructure with long-term national strategies in mind, which includes taking a long-term view of the returns from large investments in infrastructure, such as breakwaters, new railway lines, etc;
- to act as a custodian of shared infrastructure and therefore ensure level playing fields in terms of access by multiple competing operators;
- to manage infrastructure finances in a way that makes best use of public budgetary allowances, user tariffs and private sector financing, and re-invest any surplus back into the infrastructure network;
- to manage a process of private sector provision of infrastructure that will promote access by multiple players and will not discriminate in favour of any particular public or private company;
- to lower the risk associated with funding infrastructure and therefore to negotiate better rates from those financial institutions available to the private sector; and
- to promote social and developmental objectives, either through the provision of new infrastructure, by ongoing maintenance, or by subsidising or cross subsidising operators to provide services that may otherwise not be financially viable.

#### 4.2.2 Management of Infrastructure

Infrastructure could be managed by either the state utility, SOE or the private sector. Generally, government oversees the overall operations of the network infrastructure through a state agent. The Government could consider private-sector participation in infrastructure management as part of its obligation to ensure a balance of socio-economic growth and development responsibilities. The introduction of private sector participation would occur on a case-by-case basis, taking into account common user facilities and their management and regulation. Management of infrastructure by the private sector would also reduce the operational responsibility burden on the Government. This does not, however, make it the preferred option, because of the difficulty of regulating private sector infrastructure managers. The state does have the requisite capacity to manage infrastructure in most environments. An example is the NPA, which has the infrastructure management capacity as well as a sustainable revenue base to ensure long-term economic value adding without placing undue funding burdens on the state.

### 4.2.3 Operations on Infrastructure

Government has clearly promoted private sector participation in the ports environment, through the adoption of the National Commercial Ports Policy; we, however, suggest extending the principle to include operations on rail and other networks. This will allow multiple operators on the infrastructure, thus promoting competition.

In the rail environment, for example, the ideal state for the introduction of multiple operators is to have the rail utility, SOE and private-sector infrastructure companies, all with both socio-economic and commercial responsibilities, managing rail infrastructure. The exact mix and apportioning of socio-economic responsibilities will depend on the types of entity and their ability to deliver on these areas without unduly interfering with their underlying function. In general, as explored above, the utility will have the most socio-economic responsibilities, the private sector entity the least, and the SOE a range between the two extremes. A rail regulator should be established to regulate the relationship between the network owner and the multiple operators on the rail network.

Government's intention is to ensure that, as and when multiple operators, whether public or private, are introduced, they should be self-sustainable in the long term. However, due to the strategic nature of business, the state is required to retain its role as operator. In this scenario the state operator will assist the government in fulfilling its socio-economic mandate. However, defining and funding this mandate remain a challenge.

In order to ensure that the network is sustainable, efficient and responsive to the market, the network owners responsible for managing the rail infrastructure would have to be managed and given incentives to fulfill both their socio-economic and commercial responsibilities. These incentives must be shaped by the long-term needs of the infrastructure network and its sustainability, rather than by narrowly defined profit considerations. This must be accompanied by the development of appropriate systems for managing performance and driving efficiency across the network and its operations. The differing mandates of the SOE and the rail utility need to be clearly spelt out in the context of the maintenance and development of a sustainable and efficient infrastructure network. This mandate then needs to be translated into a management regime that includes shareholder and internal performance management consistent with both the mandate and Government policy. Corporate structures should also be financially stable in order to access the financial/capital markets.

### 4.2.4 Regulatory Structure

Two important points must be made. Firstly, effective regulation is critical to success, since without it, some protectionism may inadvertently creep back into the system and consumers may be made to suffer the consequences of inefficiency, for example in the form of higher prices. Secondly, the regulatory environment can turn out to be complex because of the multiple players that must be managed. Government has worked to create a competitive environment, and now through regulation must sustain the element of choice necessary to maximise levels of customer satisfaction.

The current regulatory environment is fragmented with clear economic regulation only applied in small sub-components of the freight industry. It is also poorly articulated in terms of the roles and responsibilities of the various bodies that retain overlapping regulatory functions, but which have few effective legislative powers to enforce these functions. In some cases there is direct conflict with *de facto* economic regulation of entities within the control of the same organisation. The situation of where one company is both player and referee is particularly evident in the case of Transnet in the port environment. Economic regulation is not clearly legislated, and inconsistencies exist between the sub-components of the freight logistics sector. A few results of this dysfunctional arrangement are lack of customer choice, lack of competition and high tariffs based on administered pricing.



Safety and environmental regulations are hampered by poor asset quality all too often found in the freight logistics environment, particularly within the rail sector. The poor condition of railway rolling stock and of container handling equipment at smaller ports, and the condition of secondary roads are examples of poor quality assets that could compromise safety and environmental regulations. In the case of the road freight sector, the overly competitive environment in which small road haulers operate also hampers the enforcement of these regulations.

The need to comply with multiple regulations increases the cost of doing business and reduces South Africa's competitiveness. Regulating by function rather than mode will mean that a single set of regulations will apply to cargo from its point of origin to its destination. This will significantly reduce the amount of red tape businesses encounter in the freight logistics system, and so increase the country's competitiveness.

The operating environment is characterised in some sectors by open competition, such as in road and airfreight, while in other sectors it is characterised by levels of protectionism that reduce efficiency and the value proposition to customers, such as in ports and rail. In addition, shortfalls in infrastructure provision and poor infrastructure maintenance contribute to a poor value proposition to customers and add to the logistics cost burden.

The ideal structure is to have functional regulators each covering all modes. However, managing and even reversing the proliferation of regulators and entities resulting from the restructuring of various sectors in our economy is vital. Regulators and regulatory competencies must be organized into appropriate functional alignments. To this end, this strategy apportions responsibility to the regulators according to function, rather than the modal arrangements favoured in previous documents, which were divided into functional areas. The functional regulators envisaged in this strategy are: Safety and Environment; Economic; and Security. The large number of existing regulatory bodies that presently regulate the various functions in modal and function-specific categories will be combined into functional regulators. These regulators will draw from all the existing modal regulators to create well resourced, integrated regulators that will allow greater scope of regulation with the same level of resources and reduce the number of compliance regimes imposed on cargo owners and freight service providers. This reduction in regulators will enable expansion of the regulatory endeavor into new areas, since transferable competencies, capacity and skills bases will be already available in the integrated regulators. The regulators will also act as overseers and enforcement agents to ensure maximum compliance with the set regulations and legislative frameworks. The Department of Transport through the Ministry will oversee the regulators. Particularly, the Ministry will ensure alignment with Government policy and strategy, while controlling any unintended consequences of the regulations. The overseer function will ensure the implementation of the DOT policy directives given to the regulators. These policy directives will regulate the scope of the various areas of regulation. As an example, during the interim phase in the rail subsector reform, the Minister of Transport will require that rail service providers be allowed nondiscriminatory access and pricing on the Spoornet primary network, but will also set the level of access allowed to this network so as to ensure a managed liberalisation of the primary rail network, rather than a free-for-all that could have significant unintended consequences.

The roles of the three regulators can be briefly set out as follows:

- the Economic Regulator would regulate the economic efficiency of industries and the management of monopoly power, and ensure equal access to the infrastructure network,
- the Safety and Environment Regulator would regulate institutional and human capacity, standards and vehicular technology and operations, and also deal with issues of noise pollution, vehicle emissions, land development and usage, hazardous waste disposal and the internalisation of environmental cost on the "user pays" principle,

- The Security Regulator would regulate institutional and human capacity, standards, operations and general compliance with international safety requirements.

The DOT would regulate integrated planning and implementation across public spheres and entities, while regulating compliance with cross cutting issues such as mandatory freight information filing and skills development. The DOT would also define the regulatory environment through policy directives given to the regulators that would set the pace and trajectory of reform, and also manage out any unforeseen consequences of the implementation of the reform, or any environmental change.

The Competition Commission would continue to regulate the competitive environment and limit any abuse of monopoly power. The transport regulator with its three sub-regulators would be responsible for more detailed economic regulation such as access to infrastructure, pricing of infrastructure, overseer responsibility of competition for the market such as concessions, leasing and outsourcing, and pricing and cross subsidy to sustain social and developmental policies.

The agreed approach is to have a transport regulator with sub-regulators and a separate overseer mechanism. The challenge is, however, to equip the regulator with skilled personnel. In the interim phase, the sector would have modal functional regulators and in the final phase have functional regulators.

#### 4.2.5 Skills Development

Currently, there is no national institution for logistics. The academic content taught in logistic courses at tertiary institutions is not aligned with the local environment. A comprehensive skills audit of the sector, bearing in mind the skills needed to achieve sector reform, is a pre-requisite for identifying a programme of action to improve current skills levels. The Transport Education and Training Authority (TETA), through the Sector Education and Training Authority (SETA), provide scope for enhancing and fast tracking skills development. It is proposed that a skills enhancement programme be set in place as part of the strategy implementation process.

The vision is to have a National Logistics Centre (NLC), which will have a multidisciplinary role in ensuring that the logistics education offered at tertiary institutions addresses the local logistics environment, while staying in alignment with global trends. This will also help Government to deal with issues of job creation and skills enhancement in the logistics sector. The NLC will also play an additional role as the repository of central logistics information and as a knowledge centre.

### 4.3 Financing the Strategy and its Implementation

A major problem preventing South Africa from achieving sustainable growth and development has been the low level of investment in human capital and physical infrastructure. The transport sector is one of the most important elements of the country's physical infrastructure. However, capital investment in this sector has been squeezed in South Africa over the last twenty years, so that the investment backlogs are now enormous. While there is a case to be made for greater participation by the private sector in the development and financing of transport infrastructure, as discussed above, the role of private equity investment remains limited. This strategy paper endeavors to highlight areas where the private sector can participate in transport infrastructure finance, and government endeavors to address backlogs. The relatively high cost of transport has seriously undermined the competitiveness of South African exports and contributed to the high prices of key imports, thus adversely affecting the balance of payments of South Africa.





The poor rural transportation system has adversely influenced specialisation and market development, as well as rural production and the national and international tradability of foods. The weak supply response of South Africa to policy reforms reflects the poor rural transport infrastructure and lack of access to markets. Therefore it is becoming imperative to encourage transport infrastructure solutions that involve the private sector (i.e. economic development, incentives and efficiencies, fiscal space, etc.) However, we ought to recognize the difficulties and challenges of establishing an adequate policy and regulatory environment supportive of private sector solutions, taking cognisance of the private sector's aversion to risk in most situations, while at the same time satisfying immediate needs in order to restore economic growth and improve living standards and so avoiding the poverty trap.

Private finance in transport infrastructure offers a welcome new source of investment. Every effort must be made to overcome the perception of risk which deters private investment in otherwise commercially attractive opportunities. This can be achieved by creating consistent policies and a predictable regulatory regime. We need to create a climate in which the country's infrastructure investment requirements in the transport sector can be met without placing the full burden of financing this investment on the shoulders of the state. The legacy of the apartheid system's skewed development means that it is not possible for the state to meet the national objectives on its own.

#### 4.3.1 Challenges

Establishing a sound financing framework to meet SA's growing transport infrastructure needs remains a key challenge for policymakers. An efficient transport system is crucial for attracting foreign direct investment, expanding international trade and achieving long-term investment and growth. The global capital markets have the depth, maturity, size and sophistication to potentially provide funding for all viable investments and projects in developing countries' infrastructures. However, the global capital markets have failed to do so, mostly because of the impact of recent macro-economics shocks, ongoing transformation of regulatory regimes which results in uncertainty, and the weakness of local markets in most developing countries. It has become imperative that unfinished reforms in the regulatory regimes of various states be completed so as to place their infrastructure industries on a stable and commercially viable footing that is attractive to private sector investment. The private sector demands a non-balance sheet public private partnership approach to financing and for the creation of innovative risk sharing mechanisms.

To ensure a healthy flow of capital from international and domestic markets toward transport infrastructure and related policies, institutions and regulations that create bottlenecks need to be eliminated. Multinational finance corporations, both domestic and foreign, can play a crucial role in providing risk mitigation instruments including guarantees and risk insurance. The emerging modes of infrastructure financing based on private finance and ownership have not proven resilient in the face of recent international financial shocks and crises. Where private infrastructure financing has failed due to these crises this has had a severe impact on the confidence of investors, and were this financing has succeeded it has often created market anomalies, such as a captive client base with little recourse to pricing regulatory authorities and the state often having to intervene with subsidies to correct the anomaly so created.

Consequently, state-owned enterprises in transport and other sectors will remain major players in the financing, development and delivery of transport infrastructure services in South Africa. Fundamental improvements in the creditworthiness of these enterprises will be essential to facilitate their access to global and domestic capital markets, as well as to bring in private equity investment to a range of PPPs. Corporate level and sector specific reforms will be necessary. At corporate level, the investment planning, financial reporting and corporate governance of these enterprises will have to meet commercial standards, while at sector level, reforms in the complementary regulatory environment will be essential to minimize regulatory risk. Sustained investment in transport infrastructure is unlikely to materialise unless there is a strong institutional framework for protecting creditors' rights, and also effective,

conversant and reliable avenues for legal enforcement and remedy, avenues that do not have infrastructure denied access or accelerated tariff increases as a possibility. Normally, bond investors respond to a strong institutional framework by lowering the cost of capital. The movement of private ownership has been complicated by the nature of the industry, with private sector finance only feasible to the extent that users can be appropriately charged for their direct usage. Most projects must be self contained and have no close alternatives. Financial efficiency (appropriate pricing) matters for transport infrastructure development, not only for the usual reason of allocative efficiency, but also because of certain distinctive economic characteristics of infrastructure, namely, high capital intensity, elements of natural monopoly and location specific investment.

The transition to private participation in transport infrastructure has not yet been settled and is not clearly defined in South Africa, with the exception of road infrastructure to some extent. Other items on the agenda, namely the liberalisation of markets, the reform of regulations and the restructuring of the transport SOEs and utilities, remain unfinished. Given these uncertainties and risks, the cost of capital tends to be high and make investors averse to long term investments.

### 4.3.2 Transport Infrastructure Financing Approach

In order to accelerate the transition from pure public ownership driven by fiscal transfers to primarily public ownership with risk sharing between the public and private sectors, innovative and diverse financing techniques have to be developed.

In order to do this, the following elementary issues need to be considered:

- government must consider providing collateral for infrastructure project financing (for example, concession agreement, incentives etc.);
- long-term sharing of integrated planning information must occur between the public and private sectors, for example by providing dates on demand and information on various potential infrastructure projects. The private sector can then plan future investment decisions in accordance with the cost/benefit analysis of these infrastructure projects on a systemic level, therefore reducing the system-level risk they price into their analysis.
- government can encourage private sector investors to undertake the funding of infrastructure projects by establishing transitional institutional arrangements (namely, infrastructure financing facilities) in the form of grants, guarantees or partial guarantees.
- for economically unviable transport infrastructure projects, donor funding grants need to be sourced and packaged together with fiscal transfers, private debt funding and such other instruments, so as not to make development of marginal communities solely dependent on the availability of the limited pot of donor funding and fiscal transfers.

From a funding perspective the burden of commercial transport infrastructure must be shifted from the general taxpayer to transport users.



The allocation of projects according to private sector interest and commercial value results in core funding approaches in order to leverage funding is as follows:

- **Public-Private Partnerships:** a contract between a public sector institution/municipality and a private party, in which the private party assumes financial, technical and operational risk in the design, financing, building and operation of a project. Historically this has been the model used to fund South Africa's toll roads,
- **concession-based funding:** a grant by a government/controlling authority in return for stipulated services. The private sector undertakes to deliver according to specific requirements in return for compensation, and
- **balance sheet funding:** the most developed method of financing, whereby loans are advanced against the borrowing entity's underlying balance sheet and asset value. This scenario includes DOT's agencies such as SANRAL, ACSA etc.

#### **4.3.2.1 Commercial**

Commercial projects rely less on government support, and tend to maximize PPP/concession-based funding approaches. Characteristics of commercial projects that maximise funding under the PPP/concession-based approach include:

- dominance in the sector;
- generation of robust predictable cash flows;
- natural barriers to entry for new entrants;
- mature industry;
- tangible asset-backing provided as security; and
- a clear regulatory environment.

#### **4.3.2.2 Semi-Commercial**

Semi-commercial projects include those where some level of cash flow is generated from users, but with a high uncertainty in demand or usage patterns. Funding approaches for these projects are usually enhanced through partial sovereign guarantees and subsidies, specifically to mitigate the uncertainties that exist around demand and usage patterns. These projects can also leverage variable aspects of PPP/concession-based funding as well as balance sheet lending.

Many transport initiatives fit this portfolio to some degree, and the project financing approach provides an independent assessment of the project's underlying cash flow for future debt service. A good example is the Gautrain Rapid Rail Link, which encompasses a new approach to urban public transport and is based upon strong commercial design principles. However, the inherent risk associated with untested traffic/ridership volumes is unlikely to be assumed solely by private funders.

#### **4.3.2.3 Non-Commercial**

Noncommercial projects have little or no user based cash now and require fiscal transfers or, in some specific instances, donor funds. Such projects typically occur in rural areas with limited and/or low demand. Projects that fall in this category are only able to attract significant private capital where they are supported in most instances by tangible assets.

State agencies may be able to attract private sector capital for projects in this category using the balance sheet lending approach, where they are allowed to do so in accordance with the PFMA regulations.

#### 4.3.3 Roles of the Various Parties in Funding Infrastructure

The roles of various parties in the financing of infrastructure backlogs and network development need to be clearly articulated, as a failure to define the space and role of the parties, within their respective risk profiles, existing financial positions, ability to deliver, self interest and level of responsiveness to Government policy dictates, will result in the continuation of the inappropriate emphasis and perverse incentivisation that characterizes existing infrastructure funding patterns.

It is imperative that the transport sector SOEs address their balance sheet gearing to enhance their credit profiles. However, this must not be merely an exercise in transferring balance sheet and socio-economic responsibilities to the state. To facilitate the process, those SOEs with commercial and dual mandates should subject themselves to standalone ratings by rating agencies such as Standard and Poor *et al.* The current tendency in both Government institutions and SOEs is to over-rely on sovereign guarantees without attempting independent rating, which would impose financial discipline and accountability.

Standalone credit ratings and creative financing of risk and cost mitigation strategies such as ringfenced project financing should be utilised to shift the risk profiles of existing SOE balance sheets away from the current negative impact on infrastructure financing.

Project finance is an increasingly relevant funding tool that departments can utilize to achieve strategic and financial goals, as it provides a self-financing source of capital. This funding option reduces dependence on budget allocation, and so the risks to Government are minimised. The risk to Government/SOEs is confined to the project, since the lender's resource is only involved in the project, its contracts and its cash flows. Project finance funding may help to prevent SOEs incurring unnecessary financial indebtedness other than under existing agreements without the prior consent of the majority lenders. Hence, the covenants imposed on the project financing can instill some form of financial discipline to the SOEs themselves while also having the added advantage, as compared to corporate debt, of a longer maturity and a financial risk specific to the project only. However, the impact of having a funder second guess Government's developmental needs is problematic, and a risk management bail-out process needs to be agreed upfront in the event that restructuring and or additional financing may be required in the entity in the future.

#### 4.3.4 Government Funding

Government will have an integrated role in funding, crossing spheres and mandates. All Government resources targeted at dealing with specific projects, programmes and regions need to be pooled from both an allocation and performance-measurement perspective. Non-commercial projects (for example, extension of rail infrastructure, revitalisation of branch lines, etc) currently need sovereign funding, given the low level or unpredictable user based cash flow and lack of bankable traffic flow projections. The status of some branch lines might change in future, based on the number of new entrants into the industry. The positive outcomes of new players in the rail industry can be enhanced based on the institutional reforms outlined in this document. In terms of analysing and thinking towards implementing the envisaged norms, a leasing pool vehicle for locomotives and wagons ought to be created specially for the branch lines for a specific period. Creating a leasing pool will require once-off sovereign funding to establish the vehicle. Once the vehicle is established and liquidity created, the private sector funding will find its way to this subsector. This assumes that appropriate funding from the fiscus will be made available to revitalise the branch network and ensure the necessary safety. Once private sector investors are assured that these potential risks are



being mitigated, they will feel more comfortable about investing in the subsector. Granting government guarantees based on merit in this area of funding could also be considered. Both budget allocation and government guarantees would create tangible assets that could in the future attract significant private sector funding.

#### 4.4 An Appropriate Response to the Problem Statement

The vision for freight logistics posited above was developed and designed taking into consideration both the supply and demand requirements of the freight logistics system and the policy and strategy environment defined by Government in general. The vision responds to the elements in the problem statement by re-aligning the institutional and regulatory framework to respond to existing problems and provide an apparatus for transforming the freight system so that it supports national objectives and delivers on the freight movement and handling needs of existing and future cargo owners and logistics service providers.

Defined infrastructure elements are placed under dedicated infrastructure agencies that have long term sustainability and development as mandates, rather than just profit maximisation. This, coupled with the proposed funding and management mechanisms, will remove the relationship between SOE balance sheets and infrastructure underdevelopment. Apportioning socio-economic and commercial mandates out among the utility, the SOEs and private sector entities will also allow a greater level of performance management of SOEs, which have consistently blamed their underperformance on the socio-economic elements of their dual mandate. This also provides Government with a more direct tool for managing the development of the freight system to enhance economic development. It allows Government to develop a holistic, developmental delivery response rather than a revenue-enhancement approach. The key to successful implementation of such an approach would be developing effective internal management structures that link Government imperatives with corporate and managerial performance. The direct control exercised over these *sui generis* corporate entities will ensure that Government successfully aligns policy driven economic development requirements with the rollout and maintenance of infrastructure that supports such development. The removal of many of the SOE infrastructure entities' socio-economic responsibilities will ensure that the abysmal performance of some of these entities can be isolated and effectively dealt with.

Introducing competition into the operations on infrastructure will allow more efficient operations to gradually overcome the general high level of inefficiency in the freight system. The cost of existing inefficiencies in freight operations is carried by consumers and Government, in the form of high pricing, increased costs and lost economic development opportunities. Introducing private sector operators will ensure that at least a portion of these inefficiencies are transferred to the shareholders of inefficient operators. Efficient operators will eventually price and perform these inefficient operators out of the market. As "the market" is not as efficient and effective as is sometimes suggested, this does not imply a hands-off approach to operations by Government. Government's role in this environment will be, through the economic regulator, to set market and pricing rules that resolve market anomalies, for example rural producers with low margins paying higher transport costs while facing lower levels of service. The exact mechanisms of specific rules for certain modes, corridors and regions are to be the subject of micro-level integrated regulation and planning by all spheres of Government.

If the DOT were made responsible for integrated freight planning, this would resolve the planning and implementation disjunctions characteristic of the present institutional framework. This process would also manage Government's role in pooling funding and integrating the budgetary resources aimed for resolving specific developmental and infrastructure issues. The improved information collection and filing that would support the quantitative analysis and planning process, would resolve some of the infrastructure planning and delivery shortfalls currently experienced.



## 5. STRATEGY IMPLEMENTATION

A fundamental gap often found in strategies is the failure to implement. Instead of defining events, a strategy's development is often overtaken by events, because a space is left between the plan and its implementation which allows a host of structural impediments to develop to thwart the strategy. If the National Freight Logistics Strategy is to be successful, as narrow a gap as possible must be allowed between the overall political and technical acceptance of the strategy and its implementation.

The correct accountability context is also critical for managing and governing the strategy's implementation. The DOT will lead the Inter-Departmental Task Team on Logistics (IDTTL) in its role as the guardian of the strategy's implementation. The Economic Ministerial and DG Clusters also have a crucial role tracking and overseeing the implementation as well as guiding the macro- and meso-level decision making.

### 5.1 Governance and Management

The appropriate governance and management context for implementing the strategy must be formalised and established as a matter of urgency. The need for integrated and coherent action by all input and output sectors in Government requires that all departments actively engage with the process and ensure that processes and outputs align with respective sectoral strategies. This integrated approach further requires that dedicated personnel be made available during the establishment and design phase to ensure that sectoral specialisations and nuances are catered for.

The IDTTL will report to the Ministerial Cluster, through the DG Cluster. The Ministerial Cluster will hold the DOT and IDTTL accountable for performance in implementing the strategy and in related processes and outcomes. The IDTTL will be a substructure of the cluster, chaired by the DG of Transport.

The Technical Team will report to the IDTTL (Cluster sub-structure) and the Committee of Transport Officials (COTO, consisting of Transport HODs of all provinces). The Technical Team will be comprised of the DOT Freight Logistics Branch and seconded officials from the core departments during the establishment and design phase.

The IDTTL will have a range of substructures managing specific aspects of the strategy's implementation. These sub-structures will report to the Technical Team. The focus of the Technical Team will be to design and implement a freight logistics system masterplan for the entire country and the regional integration of this plan, which has as its building blocks the District Municipality and Metro freight plans and implementations. These plans will articulate all the elements of public, private and *quasi-public* demand and supply of logistics services, and forecasts of these.

### 5.2 Regulatory and Institutional Reform

The IDTTL will begin developing the specifics of all the institutional arrangements, regulatory structures and roles set out in the strategy, including the base mechanics of the market and other rules to govern market structure and the management of the various freight infrastructure and operations companies, SOEs and infrastructure utilities. The institutional restructuring and market structure reform will occur in phases, since this is appropriate for the specifics of the particular area and can be achieved within the regulatory environment. Note that the pace and mechanics of institutional reform must be managed with an eye on the sustainability of Transnet, and of existing SOEs, while keeping in alignment with the regulatory entity that is to develop over time. The IDTTL should develop transitional blueprints that allow the benefits of the strategy's implementation to be delivered in the short to medium term, and not drive the endstate as an immediate implementation that only delivers value in the long term.



Regulatory reform is likely to take a significant period of time to design and establish. The strategy is designed therefore to be partially implemented using existing legal instruments, corporate governance frameworks and regulatory instruments such as the PFMA, until these regulatory bodies can be fully reformed. An example is the institutional and regulatory reform of the rail sector. This sector can be significantly reshaped towards the institutional structure envisaged for better rail service delivery and competition in operations without creating substantially new legal instruments and structures.

Taking this example further, the rail sector will deliver substantially on new structures and reforms, and unlock the benefits of these reforms, over the medium term (up to three years). Currently, because of reduced rail services to branch lines, rural lines and provincial lines, as well as low expenditure on this component of the network, many lines face imminent closure due to safety or commercial considerations. These closures would have dire impact on already strained road maintenance budgets and marginal rural and regional production centers. In effect, current service delivery is the reverse of the desired linking of first and second economies, produced by default and balance sheet weakness. To remedy this problem, a secondary rail network is envisaged, separate from the primary network, which will remain owned and managed by an SOE with managed introduction of competition at a rate determined by the Minister of Transport. Spoornet will operate the services on the primary network and will be allowed to use the network as an asset base for raising funds for its recapitalisation. To ensure clarity, the structure shall be as follows:

- the primary network will be owned and operated by Spoornet;
- the secondary network will be owned and operated by the rail utility, with socio-economic responsibilities also performed by Spoornet;
- operators both private and public will operate on an open access basis on the secondary network; and
- operators both private and public will operate on the primary network on a non-discriminatory basis at a level of access determined by the Minister of Transport.

### 5.2.1 Illustrative Example: Reform of the Rail Institution

This example illustrates how regulatory reform could be implemented, and provides more detail of the mechanics and structures of the regulatory transition. The secondary rail network is used as an example because some engagement has already occurred with the structure and mechanics of the reform of this component of the freight system. Note, however, that this example is drawn from some preliminary discussion and planning by the DOT, and in no way represents a finalised or approved plan in structure or nature for reform of the rail sector at this stage.

The secondary rail network can be defined as: those components of the rail network that do not link the Metros to each other or to points of exit and entry to the country; these components do not include dedicated export lines. Note that the term “secondary” does not refer to commercial or non-commercial returns of the particular services or their traffic levels, but instead to their network critical placement. The rail system cannot be broken down into commercial and non-commercial at network level, as this will relegate rural and integrated development to being solely dependent on Government funding and thus ensure that the secondary network remains unsustainable in the long-term. The secondary network will therefore be a mix of lines, defined by their network critical nature rather than by whether they are commercial or non-commercial.

### **5.2.1.1 Overall Structure**

The network will be owned and managed by an infrastructure utility. The primary rail network will remain in Spoornet as a vertically integrated rail service. Public and private operators will run rail services on this network. These operators will have non-discriminatory access to the primary network at levels prescribed by the policy directives of the Minister of Transport, so as to manage the introduction of competition to the rail sector in a phased and systemic manner. The Minister of Transport will define the economic regulatory environment. This will be implemented by instruments currently available in the PFMA and South African law, until the development and implementation of the regulatory regime. Safety regulations will be managed by the Rail Safety Regulator.

### **5.2.1.2 Regulation**

At present, there is very limited regulation of this component of the freight system. The Rail Safety Regulator (RSR) regulates the secondary network as an integral component of the Spoornet Safety Management Plan, and does not directly oversee any operational elements. There is no significant economic regulation, with certain exceptions such as the regulation of tariffs for liquid petroleum fuel movement on rail; this tariff is administered by the Department of Minerals and Energy in terms of their Ministerial Proclamations as to rail tariff increases. There are no specialised environmental and security regulations, other than those related to specific issues such as the RSR's regulation of the movement of hazardous waste by rail.

In the transitional phase, the Minister of Transport will regulate the introduction of competition to the rail sector, by allowing open access to the secondary network for licensed operators, and by incrementally introducing non-discriminatory access and pricing on the primary network. These licensed operators, both public and private, will be allowed to operate freely within their license conditions on the secondary network. On the primary network, a more direct management of access will be implemented. The level, pricing and routes for access to the primary network will be decided by the Minister of Transport and periodically adjusted on the basis of impact on the traffic levels, sustainability of services and network complexity issues. Use of the primary network will be managed by contractual agreement between Spoornet, the DOT and the operator. This will prevent the negative consequences that would follow indiscriminate and immediate liberalisation, which would not only threaten Transnet over its consolidation phase, but prevent the long-term growth and competition of smaller sustainable rail operating companies. A range of support strategies are being developed to increase the sustainability of new entrants, in particular BEE and SMME operators. This will also prevent new monopolies and oligopolies forming in the sector before the economic regulatory framework, in conjunction with the competition jurisdiction of the Competition Commission, is able to deal with such market structures.

Safety regulations controlling vehicles, class of access to specific lines, personnel requirements and operating standards will be set by the RSR in both the transitional and end-state phases. Line quality, allowable access and safety restrictions will be assessed and qualified by the RSR, which will also license operators. Inter-operability standards will be defined by the RSR and will be a requirement for licensing. The environmental jurisdiction of the RSR will need to be expanded to cover operations as well as cargo.

The security regulation will have to develop out of existing security measures contained in various legislations and regulations, as well as multilateral and bilateral commitments, and will gradually be formalised within the established transport security regulator.

The regulatory overseeing mechanism will be a function of the Department of Transport. This mechanism will investigate the alignment of the regulators with the industry strategy and policy directives of the Minister of Transport. It will also have an advisory component that formulates the pace and scope of the implementation of institutional



reform. It will investigate the impact of regulatory reform and its implementation, so as to help prevent unintended consequences, or ameliorate them when they occur, by changing the nature and scope of the elements of the regulatory reform during the implementation process. The Independent Accident and Incident Investigation arm of the regulatory overseeing mechanism will investigate all accidents and incidents and make recommendations as to their causes and appropriate regulatory or enforcement responses to prevent future occurrences.

### **5.2.1.3 Network Management**

The rail infrastructure utility will own and manage the secondary network. This will entail managing the infrastructure, which will include maintenance, expansion and development, and also control operations on the network, including signals, train schedules and access and slot management. Access will be open and allocation will be managed by a set of rules imposed on the utility by the DOT in the transitional phase. In the final phase, the economic regulator will establish the rules for access, allocation and pricing across the integrated rail network. The pricing of access and use will be regulated by an agreement endorsed by the DOT in the transitional phase, and will be regulated by the economic regulator in the end phase. This does not mean that there will be no place for private infrastructure owners or managers in the rail environment. Where opportunities exist, infrastructure owners in the private sector will also be able to manage all the operations on that particular network component. The responsibilities and relationships of such private owners will be structured in a manner similar to those of the state rail utility (or secondary rail network utility in the transitional phase) to ensure that private sector participation in infrastructure ownership does not lack incentive.

None of the network critical functions will be managed by any party other than the network utility, or the infrastructure owner in the cases just mentioned. Examples from across the world, such as Rail Track in the UK, have demonstrated that where this measure is not enforced, function disintegration occurs, for example the privatisation of maintenance, which then significantly decreases network safety and sustainability. This state infrastructure utility will not have a mandate to ensure commercial returns, but instead to deliver long-term network sustainability and development. The relationship between the rail utility and the primary network SOE needs to be clearly articulated, particularly as concerns interoperability and the definition of standards for crossing and passing traffic on the various networks. No mandates will be stipulated as to private sector commercial returns, other than certain pricing regulations governing the pricing imposed by the economic regulator.

The critical performance areas will be:

- network condition,
- traffic levels,
- network expansion,
- movement of appropriate traffic to rail,
- support of social and economic development,
- network level sustainability in funding,
- integration of first and second economies,
- BEE and SMME rail activity levels and
- safety.

This development will include rehabilitating existing lines that are in a state of disrepair, raising traffic on all lines where appropriate, and expanding the network to ensure better rail network coverage across the country.

The sources of revenue for the network utility will be:

- access charges,
- slot tariffs,
- use-based charges,
- fiscal transfers,
- transfers from the primary network SOE according to the terms of their socio-economic obligations,
- transfers from the primary network to fund network expansion,
- facilities charges,
- concession fees (for example marshalling yards conceded to facility operators such as SAPO).

### 5.3 Convergence with the Transnet Strategy

The recently approved Transnet three year strategy and its implementation is a critical factor in the implementation of this strategy. The Transnet strategy is essentially a four point plan to turn the organisation around over the next three years. The four elements of the strategy are: strategic redirection; balance sheet restructuring; improved corporate governance; revised risk and performance management.

#### Migration Path for Transnet Integrated, Inter-modal Transport Solution



*Transnet Strategy 2004*

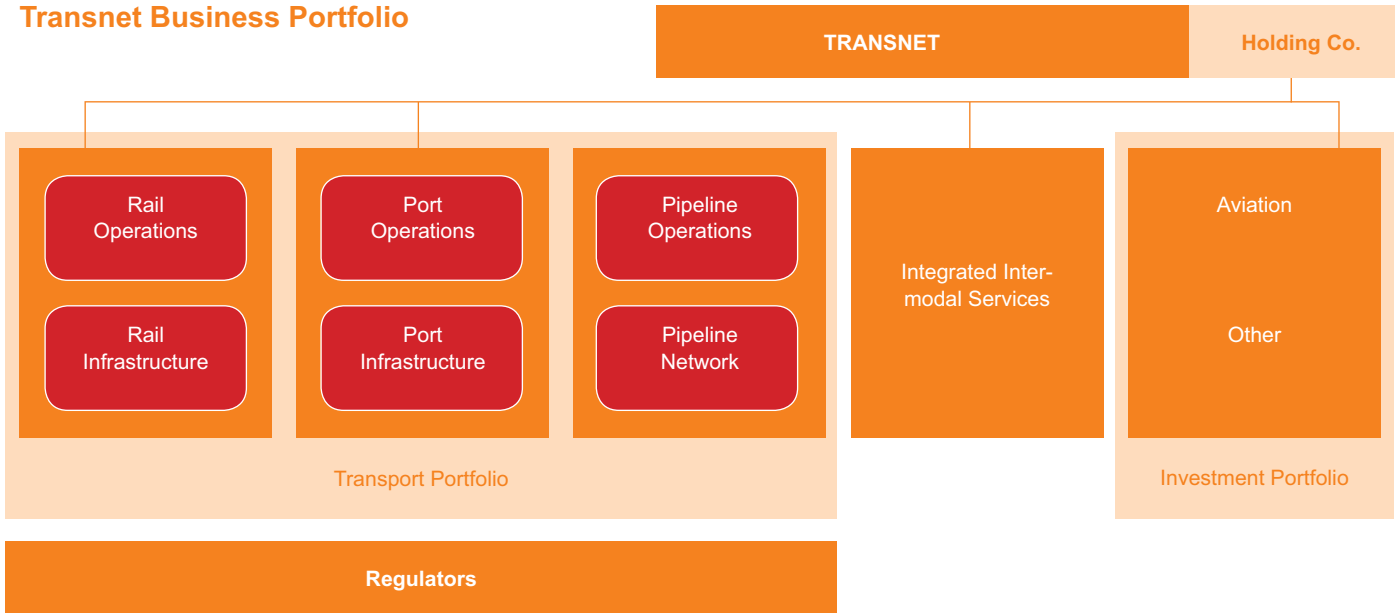
The balance sheet restructuring (non disposal components), corporate governance and risk and performance management are appropriate strategic imperatives for Transnet, in so far as they are not structural impediments to Government vision and policy. These form a fundamental requirement for both Transnet and the freight logistics system, as current inefficiencies within the group, both operational and financial, have quite a broad, negative impact on the economy and the provision of transport services.

The strategic redirection entails a restructured Transnet built on vertically separated transport services. This separated structural model is not the envisaged endstate, but rather represents a transitional stage in the implementation of this strategy. Note, however, that this transitional approach must sensitively reflect the specific requirements and realities of Government's developmental agenda, the freight system demand side and the requirements of the economy over the short to medium term.





## Transnet Business Portfolio



### Transnet Strategy 2004

The structure proposed by the Transnet Strategy, and shown above, contains the building blocks of the vision for the freight system. The vertical separation, although not clearly articulated, represents the fundamental alignment between the views at system level in the NFLS and at firm level in the Transnet Strategy. The detailed nuances that will be developed by the IDTTL will dictate the extent to which these structures must be tweaked to deliver value over the medium term and thus allow greater crystallization of the Transnet endstate. The failure to plan the introduction of competition on the operational side of rail and ports is a particular shortcoming. As an example of the ongoing refinement and nuancing of this Transnet Strategy, the DOT, DPE and Transnet are currently discussing the removal of the secondary rail network from the primary network into a rail infrastructure utility and the introduction of limited competition in the rail environment. These kinds of nuances will form the basis for the development of the transitional blueprints on the road to full implementation of the freight system vision.

The strategic re-direction component of the strategy is where there is most space for nuances. The preponderance of investments that target financial returns rather than pareto-optimality would starve some elements of the freight system of investment. Moves to exit those areas that do not provide high balance sheet returns by investment default have the potential to undermine the implementation of the NFLS and the development agenda. It is therefore critical that the impacts of such decisions be understood and that transitional blueprints take account of these unintended consequences.

Acknowledging that not all Government-owned transport entities should naturally be located within Transnet does not automatically position them outside public ownership. Determining which of these entities is appropriate to locate within Transnet is an ongoing discussion. The debate should not be viewed as simply about the disposal of such entities, but rather as a critical assessment of their role within the total logistics system, and how they fit into the public owned freight system, and, in the event that they occupy a space best suited for risk transfer to the private sector, how they can best be disposed of.

The strategy and its implementation need to take into account that Government cannot send mixed messages to the market, particularly in the context of Transnet's book building exercises to raise funding for infrastructure development

within the group. The messages being broadcast by Transnet must be consistent with the overall outcomes of this strategy, and must be informed by it. The clear message that must be consistently delivered is that the NFLS defines the freight environment within which the Transnet Strategy (as nuanced) is developed and implemented, and that the Transnet Strategy and its commitments are the short-term base upon which the implementation of the NFLS is built. It is therefore imperative that the Transnet Strategy, as nuanced by this strategy in due course, be accepted as a base over the three year period over which it will be articulated. This period of consolidation in Transnet must deliver the short term benefits sorely needed within the freight system, but must not undermine Transnet's ability to deliver on its mandate as articulated, and nuanced by the NFLS.

It is critical that the implementation take into account that a strong Transnet in the long-term is a prerequisite for a stable base for the freight system. To achieve this, no unrealisable expectations must be placed on Transnet. Expectations of Transnet must not place such a burden on management's balance sheet and financial reporting cycle performance that they are hamstrung in delivering long term sustainability. Management incentivisation further needs to be driven by this long term sustainability rather than by financial performance in the short term. The exact nature of the envisioned future Transnet needs to be clearly articulated in the specific sub-sectoral institutional structures developed by the IDTTL. It is therefore critical that the transitional blueprints and long term institutional structures and mechanics be developed as soon as possible to provide clarity for Transnet and other public sector players in the freight system, so that they do not inadvertently establish impediments to the implementation of the freight system vision, or inappropriately restructure or resource their organisations.

#### **5.4 Integrated Planning, Information Collection and Forecasting**

The lack of integrated planning within the public sphere of the freight logistics system, and between private and public sectors, is the most important element not related to institutional and regulatory reform that is addressed by the strategy. The lack of a coherent freight system masterplan makes it difficult for cargo owners, logistics service providers and Government to predict system capacity and supply with any degree of certainty. Even if the uncertainty caused by inefficient operators is factored into the capacity of the freight system, the planned static infrastructure capacity and delivery on its implementation are not visible. Even more concerning is the level of disintegration, duplication and misalignment between the various planning authorities and decision makers, which is not abating. As example, while Government is targeting the development of rural Eastern Cape and investing in rail and road infrastructure to link rural communities with production centres, Spoornet is withdrawing traction capacity from its Eastern Cape branchline network.

The DOT will immediately begin developing a freight system master plan that incorporates all current and planned freight and common use infrastructure across the country. This will allow rationalisation and alignment of the relative planning contexts of the local, provincial and national spheres. The district level planning, influenced by corridor requirements, will be the base level of planning. These plans will be filter up into the PGDP's, which will in turn filter up into the master plan. A certain amount of downward planning will be needed, as provincial- and local level planning often ignores systemic level requirements and regional and international linkages. This master plan will be a collation of freight transport plans across the country and will define strategic networks and placement of appropriate facilities and services. This plan is not intended to supersede existing planning and integration systems, but is rather designed to force a shift from integrated planning by process, with little alignment and effective overseeing, to one where overseeing and alignment is based on the actual outputs and planning contexts of the different planning authorities. This does not presuppose a new planning and alignment structure separate from the other planning contexts such as MTEF, MTSE and so on, but is rather an attempt to map out the requirements of the freight system over the medium to long term, and then use the existing planning context to co-ordinate delivery of the system components over the



period of the strategy. This planning further needs to be contextualised within freight system planning on a regional and sub-regional basis, as integration with the requirements of neighbouring countries, SADC and the African Union is equally important as integration of internal planning. The base upon which to develop regional planning integration needs to be a clearly articulated South African master plan which can then be nuanced and amended to fit regional and sub-regional requirements. The global multilateral and bi-lateral obligations of South Africa must be clearly integrated into the master plan, as some of the elements of the plan will impact on these instruments and obligations. For example, the managed liberalisation of our airfreight regime needs to be developed within the context of existing bi-lateral air services agreements, as well as informing the development and execution of future agreements.

This example can be developed further. The placement of integrated logistics facilities built on air platform hubs for aircargo consolidation and inter-modal integration needs to be planned on a national network basis, since the level of aircargo in South Africa can only support a limited number of air platforms. There are constitutional aspects to managing this process, but the relevant structures will be engaged in the process of mapping out a strategic growth path for freight infrastructure. Phase one of this growth will involve using the master plan to assess the freight logistics infrastructure supply in the public spheres, and later, phase two will develop a comprehensive view of supply including planned private sector capacity. A similar, but more difficult process will map out operations planning by major logistics service providers to link up the planned infrastructure with planned operations.

The lack of accurate forecasts of demand for freight logistics services is a major impediment to effective planning and infrastructure network strategy. The DOT will therefore develop a range of freight demand scenarios that include the initiatives of both the public and private sector. These include initiatives such as the DTI's planned IDZs, the DOA's agricultural development zones, major private sector initiatives and the like. The circular impact of expenditure on the logistics infrastructure and its impact on traffic demand will be modelled, and together with econometric models of the initiatives listed above, will deliver forecasts of the range of traffic movements over the future five, ten and fifteen year period. These forecasts will then be compared against the planned freight system master plan and an infrastructure gap analysis completed, to show the difference between what the market may require over a specific time periods and what logistics service providers and Government have planned to deliver. The IDTTL will then address the resulting shortfall (or surplus) over the relevant time period, to correct the disjunction between demand and supply. These gaps in the system will be addressed by in a joint planning context to identify the responsible delivery and funding authority for the gaps. The areas of most concern, and the most critical spaces for engagement, are projects where either Government or the private sector has already planned, budgeted for and partially implemented new infrastructure which does not integrate with the existing or planned system. Since the autonomy of various spheres of Government and the private sector may have decision and process implications (e.g. constitutional issues between the competencies of national and local government), the net effect of the alignment and integrated planning must ensure benefit to all parties, which will encourage all parties to support the process and its outcomes, in spite of the fact that they may not be funded through the process.

The lack of detailed, credible information on freight traffic and its patterns is a serious challenge to planning authorities and infrastructure providers, as well as an impediment to the optimal deployment of tactical initiatives by the IDTTL. The DOT will develop mandatory cargo information filing requirements, using both new and existing legislation and regulations. These will ensure that the sophisticated planning systems required to maintain the freight environment as an enabler of economic development are driven by quantitative and qualitative analyses, and not by periodic surveys of limited long term benefit done by consultants. The resultant freight database will be layered onto the existing baseline database (currently in architecture design stage) to allow trend analysis over the medium to long term.

The detailed planning required for the database requires advanced logistics modelling, tracking and planning systems. The DOT will begin developing a platform for freight logistics that will develop new systems where they do not exist and integrate existing systems into the platform. The information asymmetries found in the industry also need to be reduced to allow smaller players and BEE operators to compete with the larger players on service offering, rather than only allowing them to engage in the lower value adding components of the services because of a lack of information. This platform will allow better information gathering and decision making at both system and firm level, with differential access levels for industry and Government. It will also allow the development of a diagnostic national standard in logistics information integration. The system should also, in conjunction with the supply and demand aspect of the industry, provide a transactional platform that is non-proprietary, shared across industry to allow better collaboration in supply across entities, since this is a prerequisite for the higher level logistics services lacking in South Africa. The system should also allow demand supply integration, with improvement of the current lack of responsiveness in the freight logistics system.

An additional element of the system is the requirement that the IDTTL be able to track performance in the freight system network, particularly along the key corridors, so that tactical and operational network optimisation initiatives can be developed and their delivery and impact assessed. To this end, the system will include a corridor performance measurement platform. This is not a new system, but instead integrates the existing DTI system into the platform, which will expand the existing system's capability and give it access to a larger database.

## 5.5 Specific Interventions

### 5.5.1 Linking the First and Second Economy and Assisting BEE and SMMEs

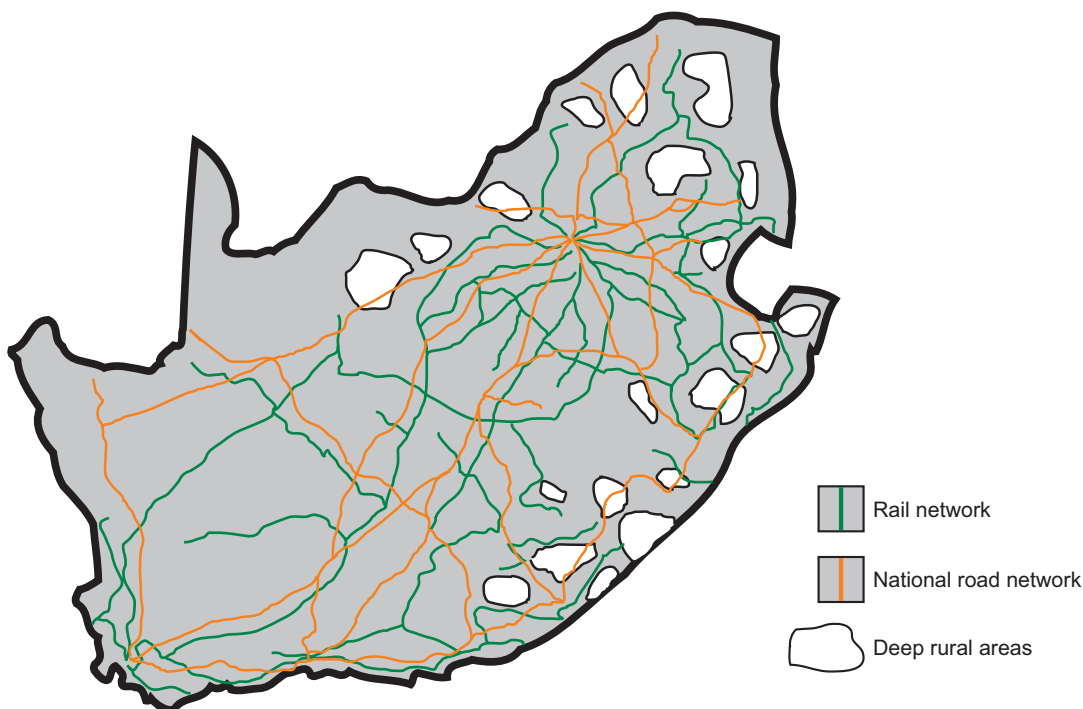
Besides enhancing the competitiveness of South Africa's first economy, a key national imperative is to reduce the economic access divide between South Africa's first and second economies. The second economy lies mostly outside the core commercial corridors, is largely rural in orientation and is characterised by economic and geographical marginalisation. For many emerging farmers and rural SMMEs, freight logistics and related services are unreliable, ineffective and/or very expensive. This is related to low production densities, poorly developed road networks and un-coordinated supply chain volumes in rural areas. Thus, accessible and scale-efficient support services and infrastructures are lacking. As can be seen in the diagram on p.57, the major rail- and road-network elements largely bypass rural nodes, which have been identified as super marginalised and in need of development attention.

Unlike the logistics system for the first economy, where commercial incentives can be created to drive reforms and improvements in general efficiency, enhancement of the rural logistics system will require greater levels of active intervention and support from Government. Improved rural logistics, encompassing freight logistics as well as allied information and business development support, can significantly contribute towards "mainstreaming" second-economy supply chains, as well as rural economic development and employment creation. It must be clearly stated that building bridges between the first and second economies by transport infrastructure is inappropriate and largely



destines rural production to remain uncompetitive. Interventions in strategy implementation need to integrate the existing first economy transport network with that of second economy production centers, to allow them to produce at levels and cost structures that will ensure that the second economy debate loses relevance over time. The diagram on p.57 clearly shows the scope of the planning required to link these production centers with the more efficient transport infrastructure. Previous planning has concentrated on how to move a train of containers from Durban harbour to Gauteng. The new planning context, from both an infrastructure and operations perspective, needs to consider at different levels in the planning framework how a consignment of containers containing aspirin enters Durban harbour and moves to a Gauteng-based traffic deconsolidation center by rail, how individual containers are railed to areas such as Polokwane, how they are then taken to district distribution centers by road, and how these centres then dispatch individual boxes of aspirin to small clinics in rural areas. In this respect, the public sector plays a crucial enabling, standard-setting and regulatory role. Large commercial producers and distributors should be encouraged to incorporate planning for the potential or latent demands of small producers and logistics service providers. For example, in the aspirin scenario related above, this would require that the “last mile element” of the journey, the final road linking the rural clinic with the district distribution center, be kept passable all through the year and that the costs of such last mile transport be kept affordable. The fundamental base of the planning context needs to be access and equivalent pricing, rather than creating a system that requires such significant operational and other subsidies that the comparative advantages of second economy production are lost into inefficiencies in the system design.

If the development of rural logistics is to be viable, traffic consolidation is needed to increase access to markets and reduce transport costs. This will involve using available infrastructure as well as developing improved infrastructure in spatially integrated and efficient ways. It must be emphasised that provision of these facilities cannot be sustained without capital subsidies of some sort. A range of interventions are required to achieve integration of the first and second economies from a freight logistics system perspective, and need to be commenced immediately, at least in planning and design.



*Spatial Disparities between Transport Infrastructure and Second Economy Environments*  
*Inaccessible / deep rural areas with relatively high populations and poverty levels*



The range of interventions required includes:

- institutional support is needed, as there are no existing government institutions or programmes that deal specifically with rural or developmental logistics; relevant roles and functions should be clearly defined, and appropriate institutional arrangements established. As a general guiding principle, there should be good organisational links with existing provincial and municipal transport, Local Economic Development (LED) interventions, and enterprise development functions,
- logistics infrastructure must be prioritised for maintenance and development in the various poverty nodes of South Africa. The feasibility of using rail branchlines for penetrating rural areas should be investigated, and feeder roads to larger and more developed routes should also be developed to encourage greater system integration. The disjunction between the logistics system and rural developmental needs must be removed by a sustained programme of infrastructure planning and delivery that reverses the trend toward marginalisation and ensures the integration of rural areas into the logistics system, rather than mere linking,
- direct support for selected rural logistics initiatives should be fostered through local and provincial implementation institutions. Funding and/or subsidisation should be considered for service provision technologies that move goods and people, both on a case-by-case basis and as part of integrated development projects in rural areas. Such technologies would include “bakkies”, lorries and other motorised forms of transport, as well as non-motorised transport including donkeys, oxen, horses and carts. Non-motorised modes of transport could enable farmers to move their produce to a central depository where larger and faster modes of transport are available to transfer them to higher order centres,
- standardisation should be developed in packaging and the sizing of micro and mini containers, which would facilitate the development of compatible transportation, storage, and handling equipment that is cheap and capable of modular integration for smaller parcel sizes (and non-motorised transport), and so promote eventual traffic consolidation. The establishment of “one-stop” logistics and transaction support centres, possibly linked to the expanding network of multipurpose rural services centres, should also be considered,
- a range of informal logistics service providers should be empowered and facilitated. This could include organising individuals and communities into co-operatives capable of generating commercially viable freight loads. Associated with this is the empowerment and capacity-building of women around logistics for rural development, as women constitute a sizeable percentage of the population in rural areas. Information sharing and business support could aid the development of viable strategies by these co-operatives,
- rural logistics requirements must be better understood. A strong case can be made for research into the logistical requirements of those rural SMMEs that have been and are likely to continue operating outside the economic mainstream, and therefore focus mainly on food security and basic livelihood objectives.

Infrastructure providers have a critical role in enhancing social and economic development and narrowing the divide between the first and second economy. The infrastructure utilities will have a mandate driven by the long-term sustainability of the network and as a result will be in a position to take decision with 20 to 30 year implications

Enhancing social and economic development hinges on providing infrastructure to support or sustain the development of SMMEs in areas outside the first economy. This may apply to areas that are geographically distant from the mainstream economy or to enterprises that, because of their size, struggle to gain access to mainstream freight transport infrastructure.



In these cases, infrastructure providers will need to actively promote the following objectives:

- social accountability, by cross subsidising some components of the infrastructure network in order to provide access to smaller, more marginal players;
- stronger links between the first and second economies, by actively providing and maintaining access to infrastructure in areas where this is justified from a developmental perspective;
- balanced urban and rural development and links between different corridors and modes, so as to promote an integrated network serving all geographic areas in South Africa; and
- increased access for small operators and customers, so that they may benefit from the mainstream freight logistics sector.

These objectives should be actively addressed through direct government funding and through subsidisation of infrastructure from a common pool generated within each infrastructure entity over the medium to long term. The size of the pool will be determined by the freight sector investment plan. The pool will be generated through the pricing strategy applied to various elements of the “commercially viable” infrastructure network, thus sustaining a managed and transparent form of infrastructure cross subsidy. In the interim, Government needs to clearly take a leadership role in developing and funding necessary infrastructure links that tie more rural communities and production centres into the first economy freight logistics system.

### 5.5.2 Skills Development

The current significant changes in the patterns of labour demand within the South African economy highlights the profound effects of a number of interrelated factors, including the structural composition of occupations. The highest growth rates in employment demand have occurred in service related industries, including the transport sector, and the tenure of this growth has been concentrated within high level, high skill occupations. These trends are likely to continue for a substantial period and largely mirror the structural changes that have occurred in the economy.

To adequately respond to these changes it is imperative that the skills development programmes in freight logistics be accelerated. The TETA has failed to adequately respond to the challenges on its own and a coherent and concerted effort by all parties is needed as matter of urgency. A national logistics centre (NLC) should be formed to co-ordinate skills development by the TETA (with respect to freight only), academia, unions, donors and research agencies. This NLC will be an extension of the IDTTL.

Key to this element of implementation is an urgently needed skills demand and supply study, as well as modelling of the impact of systemic change and other variables such as HIV/AIDS. The DOT needs to engage with the TETA and tertiary institutions to establish the NLC and begin developing the skill sets identified as deficient in the study. The levels of employment equity in the industry also need to be assessed to ensure that the skills development programme supports the general transformation of the freight logistics sub-sector into a gender and race neutral employer at all levels and reflects the demographics of the country, in contrast to the current structure of employment patterns in the industry.

### 5.5.3 Corridor Interventions and Management

A major shift to road traffic has occurred over the past decade. As rail was unable to compete for the market, rail's cost per ton grew, the utility was under invested, service levels deteriorated and a downward spiral ensued, creating a performance gap. This implies that a response will have to bring key rail corridors to a level where they provide an effective alternative to road freight.

A corridor approach (multiple commodity corridors particularly) was decided upon to optimise the freight logistics system on a tactical and operational level because of the magnitude of the task of transforming the sub sector from a supply to a customer and demand orientation. The crucial links between major production centres, points of exit and entry into the country and traffic consolidation points will be focused on because these will have the greatest effect on the freight logistics system in the short to medium term and provide a high return relative to effort.

The key corridors as identified below can provide cheaper and more efficient line haul capacity in the transformed regulatory and institutional environment, but the country cannot afford to wait for the process to run its course. Certain decisions need to be made over the short to medium term or the negative impact will be huge.

Some of the decisions that cannot be delayed include how to:

- upgrade capacity on the Durban corridor and port, or switch the corridor import/export traffic to another corridor and port;
- deliver greater operational capacity to the Maputo corridor, particularly on rail;
- enhance multi-modal solutions and inter-modal facilities especially for the Durban and Cape Town corridor;
- create capacity on the dominant corridors leading into the SADC region;
- create greater hinterland connection efficiencies for Coega; and
- deliver greater rail capacity at cheaper rates for bulk from Sishen to Port Elizabeth/Coega.

In the short term, options are limited, but drastic action is required. The Durban corridor transports a large percentage of traffic for domestic consumption and will have to be able to perform efficiently in the long term. Steps should therefore be taken to increase the port's efficiency in capacity utilisation, improve the performance gaps of rail transport and enhance the multimodal solution for the use of road and rail in combination. Enhanced rail investment in this corridor will be imperative to enhance national competitiveness. The rail infrastructure provider should involve new operators and consider alternative infrastructure options with the possible application of a PPP. Immediate investment is required to close rail performance gaps, i.e. in rolling stock, traction, signalling, training and operational planning efficiency. Investment in rail capabilities depends, however, on some provisos, namely that rail can regain the market (the multi-modal imperative), that effective service level agreements with operators that compete for the market can be developed and that mechanisms for competition in the market are effectively created. Immediate improvements in the port of Durban are crucial for the functioning of this corridor. Various PPP models including concessioning should be considered to enhance both operational efficiency and the condition of physical assets. NPA is already working on enhancing the condition of infrastructure and this should be fast-tracked and possibly linked into the PPP model used to improve operational performance.

The Cape Town corridor will also benefit from improved rail performance but needs greater emphasis on enhancing multimodal traffic. Improvements are also needed on selected single-carriageway portions of the N1 road link. The same provisos apply as for the Durban corridor.

The two regional corridors from Gauteng to Beitbridge and Maputo respectively would benefit most from reduced border post delay. Enhancing rail services to Maputo and improving rail infrastructure on these corridors would alleviate heavy vehicle traffic on the road component of the corridors and open up Maputo as an alternative bulk and breakbulk export facility.

In the medium term, introducing new rail operators on all four priority corridors would enhance performance and pave the way for improved infrastructure. In the medium term the role of ports needs to be considered. Capacity restrictions at the port of Durban will require some diversion of traffic to other ports. Emphasising a distinct and specialist role for



each South African port and investing behind these new roles will be required not only to improve the economies of scale at ports but also enhance the relative efficiency of large-scale investments in infrastructure. This is consistent with the recommendations of Moving South Africa. Such investments will need to be articulated as part of the freight transport infrastructure investment plan.

### **5.5.3.1 Identification of Corridors**

The following are the identified key corridors:

- Cape Town-Johannesburg,
- Cape Town- East London,
- Cape Town-Windhoek,
- Richards Bay-Ermelo,
- Walvis Bay-Maputo,
- Durban-Richards Bay,
- Johannesburg-Durban,
- Johannesburg-Maputo,
- Johannesburg-Beitbridge,
- Johannesburg-East London and
- Cape Town-Port Elizabeth-East London-Durban-Maputo (future coastal corridor).

The DOT will complete its baseline analysis of these. Corridor management structures will be established by the DOT and will do supply analysis (Transnet, national, provincial, local, private sector, regional and international, with special focus on land locked countries), taking into consideration the Transport master plan to be developed by the DOT. Demand analysis will include forecasting, which will ultimately enable the development of a corridor infrastructure and operations investment model. Prioritisation of corridors will occur through the corridor management structures on the basis of economic importance, and the subsequent development of a corridor optimisation strategy for each corridor, to guide the localised requirements of the freight system. These corridor optimisation strategies will be implemented under the IDTTL, but will also include accountability to the Transport MEC and COTO structures. Certain corridors have been identified on the basis of availability of suboptimally utilised infrastructure, for example the East London-Johannesburg corridor; in these corridors the optimisation strategy will include traffic farming and rerouting.