

Macroeconomy, Economic Bias & Employment

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Acronyms

ACSA	Airports Company of South Africa
GDP	Gross Domestic Product
IDTTL	Inter-departmental Task Team on Logistics
IDZ	Industrial Development Zone
ITP	Integrated Transport Plan
LCM	Logistics Cost Model
NFLS	National Freight Logistics Strategy
NLTTA	National Land Transport Transition Act
SAA	South African Airways
SADC	Southern African Development Community
SANRAL	South African National Road Agency Limited
SARB	South African Reserve Bank
StatsSA	Statistics South Africa
TEU	Twenty-Foot Equivalent Unit (intermodal shipping container)

1. Introduction

1.1 The need to calculate the cost of logistics

A number of studies, including the Reynders Commission (1972: 489), Dehlen (1993: 10), Porter (Monitor Group, 1995: Appendix) and Pretorius (1997: 8-1), have highlighted high logistics costs as one of the factors that inhibit the competitive advantage of South Africa. Yet South African transport policy and transport plans focus almost entirely on passenger transport rather than on freight transport. Although the importance of lower logistics costs has recently been noted at the highest level (Republic of South Africa, 2005[b]), all levels of government still do not appreciate the full extent of the problem, and the need to implement an action plan to address current deficiencies in the logistics system.

In order to understand and appreciate the full extent of the cost of logistics in the South African economy, it is imperative that the transport cost be calculated. This would be of benefit to a number of stakeholders.

First, government departments and parastatals should have an interest in the overall cost of transport as (i) it is an indicator of the overall state of the economy; (ii) transport has a direct impact on the competitive advantage of a country and is thus an important input in the development of trade policy; and (iii) it should be an input in the development of transport policy, as it provides information on the cost of transport per commodity per mode.

Second, knowledge of transport cost would benefit producers and marketers who seek to compare the cost of logistics of their commodity or sector with that of other commodities/sectors locally or abroad. Furthermore, it serves to indicate the relative cost of specific components in the logistics chain, which enables such companies to focus their efforts on the particular aspects where costs are highest.

Third, companies that provide third-party transport would be able to view the size of different markets, for example, the value of the transportation cost for different commodities and the modal composition of the transportation of different commodities. It would also provide a benchmark to these firms that would enable them to monitor their relative competitiveness in a certain market segment.

1.2 Purpose of the study

Freight transport cost is one of the core factors that determine product prices. It thus has a direct impact on the competitive advantage of South African goods in local and international markets. Inefficiencies in the transport sector, which leads to high freight transport cost, can consequently restrict economic growth and job creation. It is therefore important to understand the factors that impact on freight transport cost

in order to recognise the full extent of the gap between actual and economically efficient transport costs.

The cost gap, i.e. the difference between actual and economically efficient prices, can affect transport prices through both the 'price gap' and a 'service gap'. In the case of a 'price gap', the cost-to-client of a particular service is too high, but the freight consignee has no option but to accept this as a given for the transportation of a specific type of product. The reasons for the difference between actual and competitive prices are numerous and could include government-imposed taxes and levies (such as the fuel tax), the fact that the transport operator has a (regulated or natural) monopoly in the transportation of specific product(s) and may consequently charge unreasonable prices, inefficiencies in the transport sector, as well as restrictive regulations imposed on the transport market.

The impact of a 'service gap' results from the fact that freight consignees are forced to make use of a higher cost service because the lowest cost service is unreliable or unattractive due to poor client liaison or management practices. In other words, there are structural inefficiencies built into the transport mode split due to the fact that the quality of service of potentially more efficient modes does not conform to the required standards.

1.3 Scope of the study

The main thrust of this study is as follows:

- Identify the transport sectors (modes) where price wedges exist and the product categories which are most affected.
- Benchmark the unit cost of transporting specific product lines with the specific modes against international best practice.
- In cases where international benchmarks are inappropriate, the unit costs were calculated from first principles.
- Establish the benchmark mode split for specific product categories based on international best practice.
- Similar benchmarks were established for transit times, including waiting times at ports and on vehicles, for specific product categories based on international best practice.
- The international benchmark costs and mode usage per product line formed the input to a Logistics Cost Model (LCM).
- Further adjustments were required to the LCM for the calculation and presentation of specific outputs.
- The total logistics costs without the inefficiencies were compared to the similar cost output of the LCM that reflects the current (2004) logistics cost in South Africa.

Much of the data collection has been undertaken as part of the development of the LCM that was used for the *State of Logistics Survey for South Africa* study (CSIR, 2004). It should be noted that although the model requires product-specific inputs and is able to generate very detailed outputs, inputs of the base model are not yet refined to the level where we can present industry-specific data with a great degree of accuracy. Until industry-specific analyses have been undertaken (a study is currently in being negotiated with the sponsors of the *State of Logistics Survey for South Africa*), there would be a certain level of aggregation in the final output.

1.4 Study methodology

The LCM, which was used to calculate the impact of price wedges in the South African transport industry, was initially developed for the purpose of calculating the logistics cost for South Africa as input to the first *State of Logistics Survey for South Africa*, published in 2004. The advantages of using the LCM for this study are as follows:

- There would be no additional cost to develop an entirely new model.
- The output of the model is generally accepted as the standard for calculating logistics cost in South Africa.
- It is able to analyse the cost implications of both the 'price gap' and the 'service gap', as we can model unit costs and modal shifts in specific product lines.

A brief description of this model follows below.

The LCM, which consists of four sub-models (the transport cost sub-model, the warehousing cost sub-model, the inventory cost sub-model, and the management and administration cost sub-model) is unique in a number of ways and is an improvement on existing approaches for the reasons set out below.

a. The LCM employs a 'bottom-up' approach to compute logistics cost by aggregating detailed commodity-specific data, including throughput, transport and storage characteristics, as well as transport and warehousing unit costs. The aggregation of logistics costs is based on primary input elements (amount produced of a specific commodity) and the cost of performing specific tasks (transport, storage and handling) of that commodity in the logistics chain. Validity of output data can thus be verified at the primary source before any aggregation takes place. This departs from existing methods that extrapolate logistics cost data collected by means of non-specific sample surveys.

b. Although individual data elements are sourced from readily available primary sources – mostly census data and industry/sector analyses – they do not exclude the undertaking of specific surveys to further enhance the quality and accuracy of input data. However, there is no need to conduct the same surveys every year in order to produce accurate output. Once set up, the LCM subsequently focuses research on the refinement of individual input elements. It would even be possible to add more detailed layers to the LCM to undertake a detailed analysis of a particular industry.

c. The fact that the LCM is able to run off an MS Excel spreadsheet platform not only means that different sensitivity analyses can be performed easily, it also allows easy updating of data if more reliable figures are obtained. This would even allow the construction of a past record of logistics costs by retrofitting historical data to the model.

d. Data are presented per mode (collection/distribution by road and long-haul transport by road, rail, air, coastal shipping and pipeline), per cost component (transportation, warehousing, inventory management and holding cost, as well as administration and management) and per industry/sector (as defined in terms of the standard classification of primary [agriculture and mining] and secondary [manufacturing] sectors).

1.5 General input parameters and definitions

The following general input parameters and definitions are applicable to this study:

a. Transport cost refers to the cost of providing a transport service to the client, excluding value-added tax. In this respect it should be borne in mind that a substantial portion of transport services is provided in-house, in other words, not through third-party service providers. For costing purposes, in-house services were treated similar to services that are outsourced.

b. All transport costs that occur within the boundaries of South Africa, as well as that leg of an international journey that falls directly within South Africa's sphere of influence, are taken into account. For this purpose, the study distinguishes between 'domestic' and 'international' transport costs.

- Domestic transport costs occur within the borders of South Africa, including the local leg of freight destined for another country.
- International transport costs occur after the freight has been cleared by South African customs for shipment until it enters the jurisdiction of another country. All South African port costs and ocean freight costs are thus included for freight shipped overseas up to the point where the freight incurs cost at a foreign port. However, land freight destined for another Southern African Development Community (SADC) country has no international cost component, as it enters the jurisdiction of another country as soon as it crosses the South African border. Once such freight enters another country, South Africa loses all control over factors that may impact on transport cost, such as fuel and road taxes, the condition of the network and delays that might be experienced due to bureaucratic inefficiencies.

c. Prices were converted to Rand at an exchange rate of US$1 = ZAR6.6 (*The Economist*, 2005).

d. Prices are of mid-2004.

e. The base year for the analysis is the 2004 calendar year.

f. The total amount of goods transported is referred to as throughput and is expressed in terms of ton. In cases where the amount of goods produced is published in units other than tonnage (volume, number of units or value), these were converted to the ton-equivalent, for example, one litre of fuel is equal to 0.8kg.

g. Transport cost is presented in terms of Rand per ton-kilometres.

1.6 Data collation

1.6.1 Official sources of transport data

Currently there are two organisations in South Africa that publish official data on transport costs – the South African Reserve Bank (SARB) (2004) and Statistics South Africa (StatsSA) (2003). In the case of the SARB, logistics cost is listed in the Quarterly Bulletin under the 'transport, storage and communication' heading (SARB, 2004: S-111). StatsSA lists total volume (tonnage) of goods transported by road and rail, as well as the total gross income of third-party road transport providers and Transnet (StatsSA, 2003: 16.10).

Although the accuracy of the data published by these sources is not disputed, the following deficiencies have been identified when the data are to be used for the logistics planning purposes listed above:

a. The aggregation of 'transport, storage and communication' cost by the SARB in its official published data is meaningless for logistics planning purposes.

b. Both the SARB and StatsSA base transport and storage costs on total gross income of primary service companies, i.e. third-party providers. This means that transport and storage that are provided in-house, which in fact constitute a major share of total logistics cost, are excluded from their official published figures.

c. The SARB definition of 'transport' includes both freight and passenger transport, whereas the transportation of passengers does not form part of this study.

d. Income of companies that provide both passenger-related services and goods-handling and storage facilities (for example, the Airports Company of South Africa [Acsa]) is included in the definition of 'storage'.

e. StatsSA figures exclude cargo transported by air and sea (coastal shipping).

For this reason, transport cost had to be calculated from first by means of the LCM.

1.6.2 Literature review on current methodology

Delaney (2003) popularised the quantification of logistics costs, which is presented annually for the US in the *State of Logistics* report. The methodology used in this

ongoing study to quantify the inventory-carrying component of logistics cost is based on the Alford-Bangs formula (Alford & Bangs, 1955: 396-97), whereas transportation cost is calculated by means of Smith's Methodology (Smith, 1986: 4). The 2003 *State of Logistics* report quotes logistics costs in the US at US$910-billion, which is about 8.7% of gross domestic product (GDP) (Delaney, 2003).

Although the *State of Logistics* report is currently the generally accepted benchmark of logistics cost in the US, it is sometimes at odds with other similar reports and benchmarks. For example, it indicates that warehousing costs remained unchanged during the past three years, whereas other reports, such as that by Davis Logistics Cost and Service Database published by Davis (2004), show an increase driven by increased distribution complexity. The latter is an ongoing annual survey in which manufacturers, distributors and retailers participate to receive a customised benchmarking report of logistics cost and service.

Although these popular benchmarks sometimes offer conflicting data, they suffer from the same inherent constraint, namely that they rely on surveyed information supplied by companies.

First, the accuracy of the output is entirely dependent on the reliability of the information supplied by sources, which can often not be verified. In this regard it is well known that many companies are not aware of the total cost of in-house services, of which logistics is no exception. This is not because companies are ignorant about these costs, but financial control systems are often designed to ensure financial control rather than for wider planning purposes. In addition, the definition of cost items may differ between companies, which makes it extremely difficult to obtain a uniform dataset.

Second, the sample size may not be sufficiently representative to allow estimation at the national total. This is due to the reluctance of many companies to participate in such surveys on a regular basis. It was, for example, noted in a major transportation policy study that "it was often easier to find data on SA industries in the USA than in SA. The data that do exist are often inaccurate or out of date" (Monitor Group, 1995: 4).

Third, if the study were to be repeated annually, the survey should ideally obtain data from exactly the same companies. This is difficult to achieve, as some companies disappear or may elect to discontinue their participation in the programme, which means that the study cannot be repeated exactly from year to year, casting further doubt on the accuracy of the data.

Fourth, it is extremely time consuming, both for the surveyor and those surveyed, to compile and analyse the data.

Based on the above literature review, it can be concluded that practices described in the literature to calculate logistics cost have proven to be unsuitable for general application. For this reason there is a need to develop a generally accepted methodology to calculate the cost of logistics in South Africa.

1.6.3 Availability of input data

The study was severely constrained by the unavailability of information. Mode-specific cost data are extremely hard to come by, especially for local operators. In most instances it was easier to source international transport prices from the internet than it was to obtain it from local operators. The most difficult data to come by are those for local rail, pipeline and coastal shipping. The lack of data could be referred to as a data gap and although the cost implications of data gaps are less tangible, the impact thereof should not be underestimated.

2. Transport system analysis

2.1 Introduction

The study distinguishes between domestic transport cost and international transport cost (a definition of these terms is provided in section 1.5 [b]). In terms of this definition, the transport cost of the domestic leg of imports and exports amounts to 19% and 27% respectively (see table 1). In terms of the definitions of domestic and international transport, 'cross haulage and cartage' and the 'inland terminal and trunk leg' fall under domestic transport cost, whereas 'port' and 'ocean transport' comprise international transport cost.

Table 1 – Distribution of transport costs along value chain

	Portion of transport costs	
	Imports	**Exports**
Cross haulage and cartage	7%	10%
Inland terminal and trunk leg	12%	17%
Port	13%	13%
Ocean transport	68%	60%

Source: South Africa, 1999: 101

Figure 1 is a comparison of the domestic and international amount transported and the transport cost.

Figure 1 – Comparison of the amount transported domestically and internationally and the transport cost

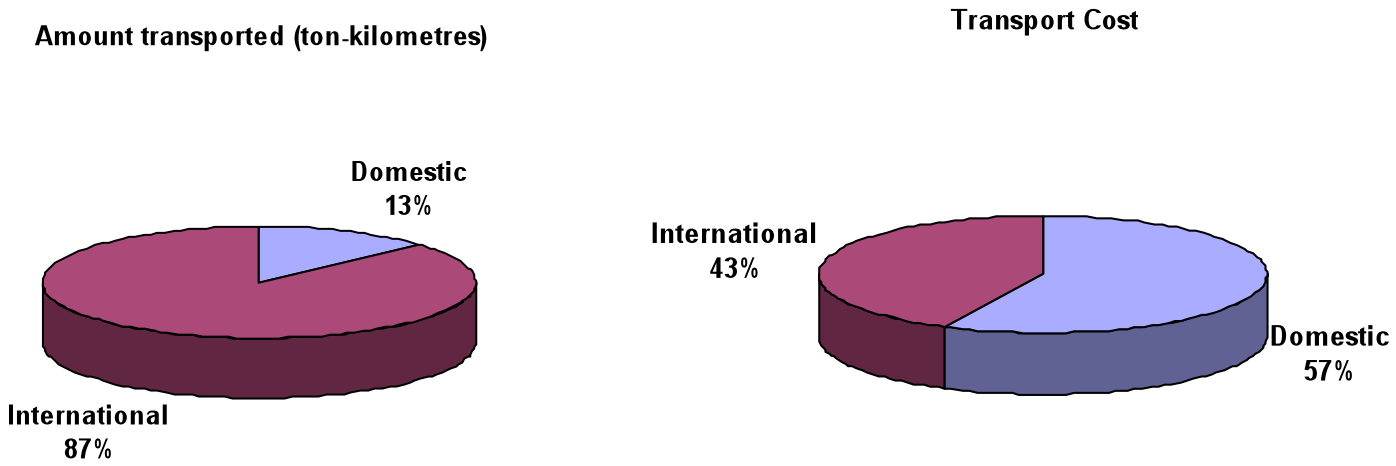

Figure 1 highlights the following characteristics of the transport system:

a. The substantial amount transported for the international segment is an indicator of the distance between South Africa and its main trading partners in Europe, North America and South East Asia.

b. Domestic transport cost far outweighs international cost, mainly because of high local land transport cost and low international ocean freight rates.

2.2 Current transport system performance

2.2.1 Key performance measures of the transport system

Table 2 summarises the results of a survey to identify and rank the transport system performance as perceived by goods consigners and consignees in order of importance.

Table 2 – Key transport system performance measures

Rank	Key performance measure
1	Reliability and transit
2	Tracking
3	Staff helpfulness
4	Loss and damage
5	Cost / rates / price

Source: South Africa, 1999: 95

It is important to note that the first four key performance measures has to do with the quality of the service and that the cost of the service is considered to be only the fifth most important aspect to clients. From this it could be deduced that any system performance inefficiencies will show up more acutely in the service gap, rather than in the cost gap, as clients will select a mode with a high quality service regardless of whether that mode is the most cost efficient in the provision of that service.

2.2.2 Performance assessment

Table 3 presents a rating of the current transport system performance in terms of the purpose of the transport with one of the four interrelated freight transport systems in South Africa.

Table 3 – Performance of the current transport system

Purpose of transport	Performance
Domestic	Customers generally satisfied
Export: Bulk commodities	International best practice achieved
Export and Import: General cargo	Service and price gaps
Export and Import: SADC	Service and price gaps

Source: South Africa, 1999: 99

The analysis identified general cargo export and import as the area requiring most improvement. However, this analysis does not identify the specific reason for, or source of, the service and price gaps. In addition, customer satisfaction with domestic transport is not a guarantee that there are not substantial gaps in this market. Domestic consigners and consignees are mostly not exposed to transport services that conform to international standards. They consequently do not have the same international benchmarks as importers and exporters.

Table 4 provides a mode-specific comparison of goods consigners' and consignees' rating of the freight transport system in terms of service performance and infrastructure quality.

Table 4 – Industry performance perception of the freight transport system

	Service rating	Infrastructure rating
Road transport	7	7
Rail transport	2	3
Ports	5	5
Inter-modal facilities	3	4
Airports / Air transportation	8	7

Scale: 10 = Excellent; 1 = Poor

Source: Based on Terranova survey, 2005

The following can be deduced from the results in table 4:

a. Air and road transport outperform rail transport by far. These are also the costliest modes.

b. The performance of the rail system is further hampered by inadequate inter-modal facilities. Inter-modal facilities are an essential component of the transportation of general freight by rail, as most short-distance collections and deliveries are done by road. The same would apply to coastal shipping, which was not rated in the survey.

c. Ports, one of the main determinants of sea transport, fare only average. This also hampers the use of one of the least costly modes. Due to the fact that coastal shipping has to use South African ports at both ends of the journey, domestic services would be affected more than international shipping.

Following in section 2.3 through 2.7 is a description of the cost and level of service of each mode to establish the underlying causes of service and cost gaps that may exist. The study is based on what is considered to be the prevailing average cost and level of service for a particular mode. It does not represent the actual cost and service quality of specific services, as these can vary substantially due to the following factors:

- Operators offer different levels of service to cater for the specific needs of a diverse client base.
- Volumes on routes can differ substantially. This influences the type of vehicle that is used and the utilisation of the vehicle.
- Size of the consignment.
- Type of product that is transported.

2.3 Road

The road freight industry is made up of a large number of operators ranging in size from owner-operators to very large listed companies with truck fleets in excess of 600 vehicles. No single operator dominates the market and operators compete freely within a technically regulated market.

Compared to the other transport modes, road transport is also unique in that many companies provide their own in-house transport services with full knowledge of the cost of third-party service providers. In addition, entry to the market is fairly easy and exit from the market could occur without major losses of capital invested in infrastructure. As a result there is little monopolistic price setting in road transport. Monopolistic prices may prevail temporarily in small niche markets within the industry, which is normal in a free-market economy.

The main reason why prices in the road freight industry do not reflect true market prices is cost driven and has to do with institutional and monopolistic price setting of inputs such as vehicle prices and fuel cost. Shadow prices were calculated for specific inputs to the resource cost of each item. Due to the differences in operating conditions and vehicles types used for distribution/collection and line-haul functions, the study presents their costs separately. The method of calculation for these two road transport functions is similar and is based on the calculation of shadow prices for each of the individual cost components as listed in table 5 and table 6 respectively.

Table 5 – Breakdown of road distribution cost

	Financial cost	Economic cost	Price wedge
Finance	0.17	0.17	0%
Depreciation	0.45	0.39	15%
Insurance	0.23	0.23	0%
Vehicle staff	0.90	0.90	0%
Overheads + Licence	0.33	0.33	0%
Fuel + Oil	0.45	0.31	32%
Maintenance	0.29	0.24	15%
Tyres	0.04	0.03	12%
Profit	0.21	0.21	0%
Total	**3.07**	**2.81**	**8%**

Table 6 – Breakdown of road line-haul cost

	Financial cost	Economic cost	Price wedge
Finance	0.03	0.03	0%
Depreciation	0.07	0.06	13%
Insurance	0.04	0.04	0%
Vehicle staff	0.09	0.09	0%
Overheads + Licence	0.05	0.05	0%
Fuel + Oil	0.13	0.09	32%
Maintenance	0.05	0.04	13%
Tyres	0.02	0.02	12%
Profit	0.04	0.04	0%
Total	**0.52**	**0.46**	**12%**

The financial cost for each of the above components was obtained from the South African Road Freight Association (2003). Average profit margins have been estimated based on interviews with third-party service providers and have been adjusted for the propensity to outsource of between 35% and 40% (see section 5.1) in the road freight industry.

2.4 Rail

Spoornet is the only provider of commercial rail freight services in South Africa. Rail operations are unofficially run as three separate business units – general freight transport that uses the national rail network, coal transport on the dedicated Richards Bay coal line and iron ore transport on the dedicated Orex (Sishen-Saldanha) rail line.

Spoornet regards freight rates for each of the business units as privileged information and does not disclose this data for general consumption. The only source of official information is the Spoornet Divisional Annual Report, according to which the average freight income, i.e. cost to client, is 10.3 cent per ton-kilometre at an average cost (to Spoornet) of 8.6 cent per ton-kilometre (Spoornet, 2004: 11). This means that the profit margin on freight transport is 1.7 cent per ton-kilometre, or 20% on cost.

There is general consensus amongst transport practitioners that substantial cross-subsidisation takes place between the Orex and Coal line operations on the one hand and general freight operations on the other. This supposition is based on the following conditions that are prevalent in Spoornet's operating environment:

- Spoornet has a monopoly in the transportation of large quantities of iron ore and coal for export purposes, whereas the general freight business directly competes with mainly road transport, which is able to offer a far superior level of service. It is therefore possible for Spoornet to charge monopolistic prices for the transportation of bulk commodities, whereas the transportation of general freight competes directly with other modes of transport.
- The Orex and Coal lines run highly specialised bulk services between essentially one origin and a single destination over long distances. The cost per ton-kilometre would consequently be substantially lower if the service were fully utilised. Therefore, considerable potential for economies of scale and economies of distance exists if these services were fully utilised.
- The general freight network is under utilised, whereas the iron ore and coal lines are fully utilised. Rail has a decreasing cost structure, which means that the unit cost for the under-utilised general freight division would invariably be higher.

This raises the question of what level of cross-subsidisation is acceptable in the rail industry. The most recent national transportation study (South Africa, 1999) makes the following two relevant recommendations about the pricing of rail services:

- One of the performance objectives in the transport system is to decrease the distorting effects of cross-subsidisation (South Africa, 1999: 96).
- The financial operations of the specialised bulk export lines should be separated from the general freight network (South Africa, 1999: 102).

These statements are supported by economic theory regarding the pricing structure of so-called natural monopolies such as rail. This study should consequently ideally consider these rail functions as three separate financial entities, each responsible for achieving its own service standards and for recovering its own cost. However, the available data do not allow such an investigation, with the result that the pricing of all rail freight services had to be treated as a single accounting entity. A comparison of rail cost was based on international best practice (United Nations, 2004: 3). A distinction was, however, made between the transportation of bulk commodities and general freight in the analysis of the quality of services.

2.5 Air

2.5.1 International

International freight rates were obtained from South African Airways (2005). Fierce competition amongst airlines on international routes means that it is unlikely that prices are currently inflated due to monopolistic pressures. The global airline industry is also under severe cost pressures and margins are currently extremely low. The number of mergers and bankruptcies in the industry is testimony to this. Local carriers such as SAA are completely exposed to prevailing global market conditions. There is thus no reason to suspect the existence of either a price gap or a service gap for the transportation of freight on international routes.

2.5.2 Domestic

Scheduled domestic air cargo services are provided almost exclusively by SAA. Safair and a number of other contractors provide chartered services. Airfreight rates were based on scheduled SAA rates.

SAA airfreight rates are freely available on its website. The benchmark rate is based on that of domestic freight rates in the US (American Airlines, 2005). These rates are representative of large consignments, i.e. not postage or small parcels, over distances of 1,000 kilometres.

2.6 Pipeline

For all practical purposes, Petronet, a subsidiary of Transnet, owns and operates most of the pipeline network in South Africa. Privately owned pipelines are feeders to and from this network.

Petronet regards pipeline transport prices as confidential and refused to disclose these for the purposes of this study. South African pipeline transport costs were consequently derived from officially published data and verified with information obtained through unsolicited means. This was possible due to the following characteristics of pipeline transport in general and the South African pipeline industry in particular.

- Petronet follows a uniform price policy for all its clients and treats all clients on an equal basis in the provision of service.
- Although there is a gas pipeline from Sasol refineries, the bulk of the pipeline network carries refined petroleum products from Durban to the Sasol refineries (Secunda and Natref) and Gauteng.
- The additional transport cost of fuel to Gauteng, as disclosed in the breakdown of the fuel price (Republic of South Africa, 2005[b]), for all practical purposes represents the cost of transporting fuel by pipeline from Durban to Gauteng. Despite the fact that 80% of the fuel sold in the Gauteng area is produced by

Sasol, this fuel includes the full transport cost as if it were transported from the coast.

- More than 90% of pipeline costs are fixed. Transport cost per unit consequently decreases as the volume transported increases until the pipeline reaches its capacity. This means that the unit cost of transport by Petronet should be at its lowest, as its main pipeline currently operates at or close to capacity. A second pipeline is currently planned for operation in 2010.

Unlike Petronet, many international, privately owned pipeline carriers who offer their services to multiple clients publish transport rates freely on the Internet. The benchmark pipeline transport cost is based on published rates of privately owned and operated pipelines in the US and Canada (Zacharias, 2005) which transport similar products over a distance similar to that in South Africa.

2.7 Water transport

2.7.1 International ocean freight

For the purpose of this study, international ocean freight is separated into bulk transport and containerised freight. Bulk carriers are used for the export of commodities such as iron ore and coal, and the importation of crude oil. The majority of bulk exports occur at specialised ports (Saldanha Bay and Richards Bay), whilst importation of crude oil takes place mainly at offshore oil terminals. The competitiveness of the international bulk transport business and the specialised nature of the ports and terminals mean that this business conforms to international best practice and that there is no evidence of either a price gap or a service gap for international bulk transport.

Due to competition amongst international ocean container transport carriers there is no reason to suspect the existence of either a price gap or a service gap for the transportation of general containerised freight due to monopolistic pressures. However, the following cost drivers have a significant impact on international container charges to and from South Africa:

- South African port charges, which are considered to be higher than the international norm.
- Port turnaround time is the time taken for a vessel to arrive in port, unload, reload and depart. The average vessel turnaround time at South African ports is 13.5 hours and it is estimated that 61% of all vessels are delayed. Average port time should be reduced by 26% to 10 hours per vessel (Hong Kong, 2004).
- The size of container ships could be increased from the current 2,000 Twenty-Foot Equivalent Units (TEUs) to 3,100 TEUs. The economies of scale in using larger ships mean that the daily cost per TEU can be reduced from about R56 to R48, a saving of 14%.
- Reducing the number of stops per ship by consolidating freight into fewer ports could save 11% in ocean freight rates. However, this would require policy

changes in the management of ports, upgrading of major hub ports, upgrading of intermodal transfer facilities and improvement of the rail general freight service.

- Reduction of the travel distance of ships: ideally the hub port for ships to the ports in the Americas and in Europe should be located on the west coast and the hub port serving ports in East Asia and Southeast Asia should be on the east coast. It is expected that average distance could be reduced by 5% if hub ports are positioned optimally.

2.7.2 Coastal shipping

South Africa has no navigatable inland waterways, which means that domestic water transportation is restricted to coastal shipping. The extent to which coastal shipping can serve domestic transport needs is further constrained by the fact that the main local market and industrial production are situated in Gauteng, which is roughly 500 kilometres from the coast.

Only one operator, Unicorn Lines, which is owned by Grindrod, provides a scheduled shipping service along the coast of South Africa. Unicorn does not publish its shipping rates, but prices could be obtained fairly easily from shipping agents. Although only one operator provides this service, it competes directly with land transport modes. Under normal circumstances, rail would be the natural competitor of coastal shipping. However, due to the perceived poor level of service provided by rail, coastal shipping would view road transportation as its main competition. It is therefore to be expected that coastal shipping prices would tend to be higher than international best practice.

A number of ships also provide bulk transportation along the coast. One such example is the transportation of high-octane unleaded petrol, which Engen transports from its Durban refinery to Cape Town, as the Caltex refinery in Cape Town does not produce this type of fuel. Because bulk carriers are as a rule on long-term lease to specific companies, it is all but impossible to obtain accurate costs for this form of transport. It is nevertheless expected that the prices and level of service would conform to international standards, as vessels could be leased from anywhere in the world.

The biggest constraint to coastal shipping is the relative inefficiency of local ports. This is exacerbated by the lack of intermodal facilities to take goods further inland, particularly at smaller ports. Coastal shipping is even more sensitive to port costs than imports and exports, as local ports are used for both dispatching and receiving goods. Combined with the fact that the transport distance is relatively short compared to international shipping, it means that port costs constitute a relatively high percentage of total coastal shipping costs.

3. Price gap

3.1 International trade perspective

Table 7 illustrates the extent of the price gap of international transport by mode.

Table 7 – International transport price gap

		South Africa	Best practice	Price gap	Price wedge
		R/ton-km	R/ton-km	R/ton-km	
Air		1.10	1.10	0	0%
Ocean	**Bulk**	0.03	0.03	0	0%
Ocean	**Container**	0.12	0.10	0.03	21%

a. International carriers generally have to adhere to international best practice as they are subjected to global competition.

b. In addition, airports and bulk export facilities are efficient in terms of international standards.

c. The price gap in ocean container shipping results from local port policy. Port policy not only impacts directly on prices due to high tariffs and long turnaround time of vessels, but it also restricts shipping lines to fully exploit the potential economies of scale of larger vessels.

3.2 Domestic perspective

Table 8 illustrates the extent of the price gap of domestic transport by mode.

Table 8 – Domestic transport price gap

		South Africa	Best practice	Price gap	Price wedge
		R/ton-km	R/ton-km	R/ton-km	
Road	**All**	0.65	0.57	0.07	11%
Road	**Distribution/Collection**	3.07	2.81	0.26	8%
Road	**Line haul**	0.52	0.46	0.06	12%
Rail	**All**	0.13	0.13	0.00	0%
Air	**Domestic**	3.32	3.06	0.26	8%
Pipeline	**All**	0.15	0.08	0.07	46%
Water	**Coastal**	0.14	0.13	0.01	10%

a. The price wedge of **road** freight transport is relatively small. Due to the large market share of road transportation, the price wedge has a major impact on total freight costs.

b. There is no price wedge in **rail** transportation. As mentioned in section 2.4, this is not a true reflection of rail pricing, as the lack of detailed data meant that all rail freight services had to be treated as a single accounting entity.

c. The price wedge of freight transport by **air** is also relatively small. Unlike road transport, the small market share of the airline industry in freight transportation means that the price wedge does not have a major impact on total freight costs.

d. Transport cost by **pipeline** in South Africa is almost twice the amount of that in a competitive market. The reason for this is that Petronet merely has to undercut road and rail transport to attract all the business. The reasons for this are as follows:

   - Road transport costs are too high over this long distance to pose serious competition to the pipeline.
   - Both Spoornet and Petronet are divisions of Transnet. It should therefore be borne in mind that the average rail freight rate would not be applicable to the transportation of petroleum, as that rate is weighted heavily in favour of the transportation of coal and iron ore which has a much lower transport cost than general freight. In highly regulated markets such as Russia, the pipeline transport rate is often set at 75% of the rail freight rate. If this rule of thumb is applied to South Africa, it means that the equivalent rail freight rate for petroleum is 20 cents per ton-kilometre, which conforms roughly to that quoted by sources in the petroleum industry.
   - The only viable competition to the pipeline would consequently come from the two Sasol-operated refineries close to Gauteng. However, since the fuel from these refineries is also subjected to the 'pipeline' transport cost, there is no real incentive for Petronet to lower its rate.

Despite the large price wedge in pipeline transportation, its overall impact on the South African economy is expected to be small. However, the influence of the pipeline pricing strategy has a much larger impact on the South African economy than the market share of pipelines suggests due to the following reasons:

- It should be considered that notwithstanding the fact that 20% of the fuel used in Gauteng and surrounds originates from the coast, all fuel in this area is subjected to transport cost as if it were refined at the coast. If the pricing policy of pipelines is combined with the highly regulated fuel price policy, it has a considerable impact on the price of fuel.
- If pipeline cost strategy continues when the pipeline network is expanded, its market share is likely to increase. This will result in an increase in the total cost of transport.

3.3 Impact of the price gap on total transport cost

Table 9 illustrates the impact of the price gap on total transport cost in South Africa.

Table 9 – Transport cost gap for 2004 in R-million

	Domestic (Rm)	International (Rm)	Total (Rm)
Total current transport cost	143 622	107 715	251 337
Total transport cost with cost saving	129 048	93 883	222 931
Total cost gap	14 574	13 832	28 406
Price wedge on cost gap	10.1%	12.8%	11.3%

The following can be deduced from the data in Table 9:

a. Domestic and international transport costs amount to 57% and 43% respectively of total transport cost.

b. Based on a GDP for South Africa of R1,374,476-million in 2004, total transport cost in South Africa amounted to 18% of the gross geographic product of South Africa. Domestic transport cost amounted to 10% of the GDP and international transport cost amounted to 8% of the GDP.

c. A saving of 2% on the total GDP could be achieved if the cost gap is eliminated.

d. In absolute monetary terms, the cost gap on the domestic side is almost exclusively due to input cost pressure on the road freight industry. This pressure stems directly and indirectly from monopolistic and institutional price setting and taxes.

e. In relative terms, pipeline transport, which is provided almost exclusively by Petronet, a division of the government-owned Transnet Ltd., has the largest cost gap (see table 8).

f. The main cost savings on the international side can be achieved through a reduction in port costs. This includes lower port tariffs and fewer delays at ports, as well as the restructuring of ports to make provision for the establishment of major hub ports.

4. Service gap

4.1 International

Due to fierce competition on international air and sea routes, it is unlikely that prices are currently inflated due to monopolistic pressures. Local carriers are completely exposed to prevailing global market conditions. There is thus no reason to suspect the existence of a service gap for the transportation of freight on international routes.

4.2 Domestic

4.2.1 Target mode split

The following factors need to be taken into account when the mode usage of countries are benchmarked:

- Unit of comparison, for example, tonnes or ton-kilometres.
- Size of the economy.
- Structure of the economy.
- Topography of the country.
- Geographic location vis-à-vis that of major trading partners and access to the sea or other major waterways.
- Size of the country.
- Quality and cost of modes in the countries used as a benchmark.

The current mode split of South Africa is compared in table 10 to that of a number of countries which represent the world's largest economies and South Africa's main trading partners. Table 10 also shows a likely benchmark that could be considered as appropriate for South Africa based on the presented international experience.

Table 10 – Mode utilisation in terms of ton-kilometres

	SA	Canada	France	Germany	Italy	Japan	UK	US	Benchmark
Air	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.3%	**0.1%**
Water	0.9%	9.2%	5.2%	17.6%	13.0%	58.0%	23.6%	20.5%	**3.0%**
Fuel pipeline	2.2%	23.9%	9.0%	4.1%	4.7%	0.0%	5.5%	16.6%	**4.0%**
Rail	29.3%	50.5%	20.7%	19.6%	8.7%	3.1%	6.3%	36.3%	**45.9%**
Road	67.5%	16.3%	65.0%	58.6%	73.5%	38.1%	64.7%	26.4%	**47.0%**
									100.0%

Sources: De Mendonca, 2005: 2; European Union, 2005; and US Department of Transportation, 2004

A number of issues can be highlighted from the above table:

a. Freight transported in South Africa is dominated by the **road** transport mode.

b. A relatively small portion of freight is transported by **rail**, considering the geographical size of South Africa and the fact that those large quantities of raw materials, of which the main contributors are coal and iron ore, are transported over long distances to ports for export. Unlike most of the countries listed, South Africa has no commercial inland waterways for which rail should be the closest substitute.

c. The share of **air** transport to the total transport market conforms well to international best practice. This supports the view that there is not a substantial cost gap in air freight transport.

d. Domestic **water** transport has a lower share of the total transport market than the other countries in the survey. The reason for this is that South Africa does not have large lakes or navigatable inland waterways to supplement the road and rail network. All domestic water transport is consequently by coastal sea transport. The main market in South Africa, as well as the main production capacity, is in Gauteng, which is about 500 kilometres from the closest seaport. It can therefore be expected that coastal transport would play a lesser role in the domestic transport system than in most other countries.

e. The current share of **pipeline** transport in the total share is low, mainly because substantial fuel refining capacity is available close to the Gauteng market. This fuel is refined synthetically from coal, most of which is mined in fairly close proximity to refineries. It is estimated that only 20% of the fuel supply to Gauteng and surrounds is from coastal oil refineries. The bulk of the increase in fuel supply would, however, come from the coast, either from gas fields or from imported crude oil. This means that the pipeline network will have to be expanded considerably to cater for the increased demand. There are, for example, plans to build a second pipeline from Durban to Gauteng (2010) and between Saldanha Bay, Cape Town and Mossel Bay. This will bring the

share of pipeline transport more in line with international practice in countries which do not have major crude oil or gas reserves.

4.2.2 Cost implications of the service gap

Table 11 illustrates the impact of the service gap on total transport cost for South Africa.

Table 11 – Domestic transport service gap for 2004 in R-million

	R-million
Total current domestic transport cost	143 622
Total domestic transport cost with improved service	121 140
Total domestic service gap	22 482
Service wedge	15.6%

A number of issues can be highlighted from the above table:

a. In absolute monetary terms, the cost gap on the domestic side is almost exclusively due to a modal shift away from long-haul road to rail. If the benchmark mode split were achieved, rail freight would increase by 57%. This increase consists entirely of general freight.

b. In relative terms, coastal transport would carry three times the current volume and pipeline transport 1.8 times its current volume.

c. The study did not take into account the investment required in the transport system to achieve the desirable level of service and capacity expansion that may be required to accommodate an increase in the volume of freight on rail, pipeline and coastal shipping. There could also be major structural costs in the road freight industry due to a 30% drop in total freight transported.

5. Economic implications of the price wedge

5.1 Overview of the economic impact of transport cost

a. Goods transport as reflected in the national accounts amounts to R43,919-million in 2004. This represents only 3.2% of the GDP of R1,374,476-million.

b. The amount for goods transport that is shown in the national accounts, however, reflects only the cost of goods transported by third-party service providers within the borders of South Africa. If in-house transport costs were added to third-party transport cost, the total value of domestic transport amounts to R134,669-million per annum.

c. The propensity to outsource transport is only about 33%, which means that two-thirds of all domestic transport costs are incurred when firms transport their own goods.

d. Total domestic and international transport cost totals R242,384-million per annum, which amounts to almost 18% of the total GDP.

5.2 Transport system performance gap

Table 12 illustrates the impact of the cost gap on total transport cost for South Africa.

Table 12 – Transport cost gap for 2004 in R-million

	Domestic (Rm)	International (Rm)	Total (Rm)
Total current transport cost	143 622	107 715	251 337
Total cost gap	37 056	13 832	50 888
Total cost wedge	25.8%	12.8%	20.0%

The following can be deduced from the data in table 12:

a. A total saving equal to 3.7% of the GDP could be achieved if the cost gap was eliminated completely.

b. About 73% of this saving can be achieved by eliminating the cost gap in domestic transport.

6. Key intervention areas

6.1 Introduction

In light of the cost gap in the supply of transport, a number of key intervention areas were identified to significantly reduce the cost gap over the next 10 years. The key intervention areas to be considered can be grouped as follows:

- Policy and legislation.
- Pricing practices, including institutional price setting and regulated prices. This includes prices of both the supply of transport, i.e. the pricing practices of parastatals, and of inputs, such as fuel, to the transport sector.
- Investment in transport infrastructure.

This section reviews existing policies, pricing strategies and infrastructure plans to assess the extent to which each of these will contribute to the elimination of the cost gap. Recommendations are made on how these policies and plans could be adjusted and which additional interventions would be required to reach the stated goal of eliminating the cost gap in the transport sector.

6.2 Policy and legislation

6.2.1 Land transport policy

Regulation of freight transport focuses almost exclusively on technical regulation and loading restrictions of road vehicles (Road Traffic Amendment Act 20 of 2003). Land transport policy and legislation is governed in terms of the National Land Transport Transition Act (Act 22 of 2000). One of the main aims of the NLTTA is to integrate transport modes, but the focus is almost exclusively on passenger transport. In terms of the NLTTA, it is compulsory for all second (provincial) and third (local) authorities to prepare an Integrated Transport Plan (ITP). In addition to outlining a road network plan and an infrastructure implementation plan, the ITP should include a Public Transport Plan, a Rationalisation Plan to rationalise subsidised bus services and an Operating Licence Strategy in terms of which operating licences are awarded to minibus-taxis.

Although there is provision in the regulations of the LTTA for the ITP to include a chapter on freight transport, this aspect is often ignored or addressed superficially in the Plans. A survey of a number of approved ITPs has shown that in reality less than 10% of an ITP is devoted to freight transport. This has obvious dire consequences for transport policy and infrastructure planning. For example, ad hoc planning measures, such as the banning of freight vehicles from public highways during certain hours of the day to ease road congestion, have a major impact on logistics cost and long-term industrial development.

In order to address this deficiency in transport policy and regulation, Minister Jeff Radebe launched the National Freight Logistics Strategy (NFLS) on 25 September 2005 (Radebe, 2005). The NFLS was set up in response to the problem statement developed by the Inter-departmental Task Team on Logistics (IDTTL) and articulates a framework for the management and development of the freight system.

Following from this, a Freight Logistics Master Plan for South Africa will be prepared under the guidance of a technical team. It is intended that the Master Plan will find regional implementation in the preparation of District Municipality and Metro Freight Plans. Judging from the time taken from inception to the completion of Transport Plans, it is unlikely that the Freight Logistics Master Plan will have any significant impact over the short to medium term.

6.2.2 Rail

One of the key aspects noted in the analysis of the price gap is the cross-subsidisation of the divisions within Spoornet. As far as could be established, no unbundling of Spoornet's freight operations is envisaged to prevent cross-subsidisation from the monopolistic profits on the dedicated iron ore and coal lines to general freight services, which competes directly with customer-orientated road freight companies. It is also unlikely that Spoornet will consider separate financial reporting for these three divisions over the short to medium term. Even if Spoornet could be convinced to report profits of these divisions separately, it remains to be seen if government (as sole shareholder) will attempt to influence its pricing structure directly.

6.2.3 Sea transport

Some progress has recently been made towards tariff restructuring. However, South African port tariffs remain substantially higher than international best practice. Competition between ports is the only way to bring prices down in the long term through exploitation of their competitive advantage, including the creation of hub ports to increase efficiency. It is, however, unlikely that ports will be privatised or ownership devolved to provincial or local authority level for the foreseeable future.

6.2.4 Pipeline transport

Regulators for both gas and liquid fuels are expected to be in place by end-2005. These Regulators are created in terms of the Petroleum Pipelines Act (Act 60 of 2003) and the Gas Act (Act 48 of 2001). Provisions in these Acts will make it possible for parties other than national government (through the parastatal Petronet) to own and operate petroleum pipelines. This will allow the private sector to compete directly with Petronet.

However, Petronet's planned new pipeline between Durban and Gauteng will serve to strengthen its monopoly in transporting fuel to South Africa's major retail market. Deregulation of the pipeline transport market alone is therefore not sufficient to curtail monopolistic price setting. Real competition over the next 10 years will only be possible if Petronet's operations are subjected to competition laws.

6.2.5 Air transport

During the past decade, air transport regulation in South Africa has moved from very strict economic regulation to mainly technical regulation. Especially in freight transport, the operators are allowed to operate freely. Even though Acsa has been privatised, it still has a virtual monopoly on airport facilities in all major centres. However, some smaller airports are using their competitive advantage to compete with the larger established airports. As could be expected, this is a slow process due to the size of the investment in the upgrading and expansion of airports, but at least the regulatory framework allows for such competition.

6.3 Infrastructure and operational development

6.3.1 Road

South Africa's road network includes national, provincial and local systems. The national system includes about 19,000 kilometres of primary roadway of which the South African National Road Agency Limited (SANRAL) manages about 7,000 kilometres (37%). Created in 1998 to replace the Chief Directorate: National Roads of the National Department of Transport, SANRAL is a registered company with the National Minister of Transport as sole shareholder. As it is run like a business instead of a government department, it can make use of innovative ways to fund and finance roads, whilst still benefiting from government backing when it negotiates financing terms. This has allowed SANRAL to perform its function effectively, and the national road network is generally in a good condition. The only concern regarding the national road network is that toll financing will increasingly be used to fund the upgrading and maintenance of these roads. This will increase logistics costs even further if rail continues to be an unacceptable alternative for long-haul transport of general freight.

The remainder of the primary road network is managed provincially, although it has been identified as serving a national function. In addition, the provincial road systems total about 170,000 kilometres. About 64,000 kilometres of the local system is surfaced. It is up to the provinces to fund, build, repair and operate their individual systems. For a number of years now the need for investment in road infrastructure has been growing while total expenditure on the road system has been declining. It is always difficult to make estimates about the extent of this backlog, but according to some sources, the backlog in expenditure on roads is around R30,000-million. R3,000-million of this backlog relates to the national road network – mostly those roads that are managed by provinces.

Government has acknowledged the backlog in funding and during the last financial year, there has been a welcome increase in road expenditure budgets. For example, transfers to the National Roads Agency have increased on average by 11% per annum from 1998/99 to 2002/03, from R654-million to R1,241-million. However, this amount is insufficient to make a real impact on the maintenance backlog.

The Department is currently undertaking a study to develop a road infrastructure strategic framework that will give effect to the national vision of road transport in South Africa, taking into consideration the socio-economic environment, national imperatives, policy goals, institutional arrangements, funding mechanisms, current realities and future scenarios, as well as the needs and perceptions of the road user.

The local road systems (urban roads and streets) include about 350,000 kilometres of roadway. The main challenge of local authorities is to manage urban congestion, which is caused mainly by private cars. This means that almost all investment in urban road expansion is focussed towards passenger transport rather than freight transport.

6.3.2 Rail

Spoornet's stated long-term goal is to increase its share of the market where it competes with road transport, i.e. general long-haul transport, from 9% to 30%. Spoornet's strategy is to focus on improving service provision and replacing redundant equipment, which is currently the main reason why it does not compete well with road transport in contestable markets.

In terms of service provision, Spoornet has identified development and acquiring of technical skills (engineering, IT specialists and tradespeople) as a priority. Although technical skills are important, this alone will not solve Spoornet's poor client ratings and increase its market share. Poor client ratings can only change if skills are developed in areas such as client liaison, operations management, marketing and product development. Spoornet also needs a mindshift from 'technically focussed' (which is important but which should be regarded as a given) to 'client-focussed' service delivery. In this respect it is widely recognised that it is far easier to acquire the necessary technical standards than it is to change current and potential clients' perception about service quality. Spoornet will therefore only be able to turn around its general freight business in the long term after providing sustained high-quality service over many years.

Spoornet plans to invest about R40-billion over the next five years in new equipment and infrastructure upgrading. The focus of this investment will be in signal upgrading and maintenance, new rolling stock and locomotives. Although investment in these areas is essential for Spoornet's continuing operations, no mention is made of the upgrading, expansion and development of intermodal facilities. Spoornet will not achieve the desired mode split if it does not have a proper interface between long-haul rail services and local distribution/collection by a multitude of private road operators.

6.3.3 Pipeline transport

Petronet recently announced that R3-billion has been approved for the design, construction and commissioning of a new multi-product pipeline between Durban and Gauteng. The new pipeline will double Petronet's current pipeline capacity to accommodate the growing transport needs of refined petroleum products such as petrol, diesel and jet fuel along the Durban-Gauteng corridor. As the safest mode of bulk petroleum product transportation, this pipeline project will, in the long term, ensure optimal use of the fuel transport infrastructure in the country.

In addition to this, Petro SA is planning a pipeline between Saldanha Bay and Cape Town and further on to Mossel Bay. These investments will ensure sufficient pipeline capacity in the long term and that the pipeline mode reaches its target modal split.

6.3.4 Ports

Although investment in port infrastructure supports the stated policy of the National Ports Authority of South Africa, the real problem is that the funds are not channelled according to the desired policy as stated in section 6.2.3. The brief account of current and planned port investments given below will illustrate this point.

Port investment is currently dominated by the building of a modern deepwater port at the mouth of the Coega River to complement the port of Port Elizabeth. The port will be able to accommodate vessels of up to 80,000 deadweight tonnage. Two breakwaters and five berths will be constructed, including two container and three general bulk cargo berths, each 300 metres in length.

The National Ports Authority provides two motivations for the establishment of an eighth port in South Africa.

- First there is a need to provide further container capacity, as the container ports of Port Elizabeth, Durban and Cape Town are nearing capacity. The development of an additional port is, however, contrary to the notion of hub ports. In order to reduce long-distance shipping costs by using larger vessels with fewer ports of call, the expansion of one of the existing ports would have been more appropriate.
- Second, the development of the new port coincides with the development of landside infrastructure for an industrial development zone (IDZ) by the Coega Development Corporation.

Development of the **port of Durban** includes:

- Providing additional container handling capacity to meet future demand, made possible through an equipment replacement programme and infrastructure improvements. Additional equipment includes three quayside cranes and 20 straddle carriers. The upgrade will increase the capacity of the terminal from 1.3-million to 1.6-million TEUs per annum. Thereafter additional capacity will be provided by the conversion of Pier 1 for container handling, encompassing the conversion of infrastructure and the acquisition of equipment.
- The consolidation of general cargo handling facilities and the alignment of operations with best practices. The Durban Container Terminal will be upgraded and new deep-water quays will be developed in the City Terminal area (with a length of 1,200 metres and 200 metres reclamation). This will result in the consolidation of general cargo operations.
- Moving of the port to the present airport location.

The **Port of Cape Town** currently has a throughput capacity at the container terminal of 420,000 TEUs per year. This follows the recent increase in ground slots

from 3,500 to 4,500 TEUs (with an average stacking height of two containers). When the Ro-Ro shed is moved, annual TEU capacity is expected to increase by a further 50,000. Plans are also under way to have a permanent integral reefer stacking area with 1,000 reefer points. In addition, two post-Panamax cranes, useful for working ships stacked five-high and able to handle container vessels of more than 4,000 TEUs, have been commissioned.

Upgrading of the equipment at the breakbulk facility includes the phasing in of either vessel gear or mobile harbour cranes while lowering the usage of existing general and four-tonne cranes.

Although there has been no official announcement, it has been said in informal discussions that plans are also afoot to develop a container terminal at the **port of Saldanha Bay**.

7. Conclusions

a. Research into transport costing and pricing aspects is seriously hampered by what can be termed a 'data gap'. This lack of data means that freight transportation planning is seriously constrained; (mainly) parastatal monopolies in the transport sector regard such information as privileged, which is contrary to international best practice. The cost implications of this planning vacuum have not been quantified.

b. The service gap is substantially larger than the price gap, considering the fact that consigners and consignees of freight regard quality of service as far more important than transportation cost. They would consequently prefer a more costly mode which offers the desired level of service above a cheaper mode which offers an indifferent level of service.

c. The following factors can be identified as the main contributors to the cost gap:

- The long distance between South Africa and major world markets.
- The distance between the major industrial capacity in Gauteng and the coast. This substantially adds to the already high cost of transportation to South Africa's main trading partners.
- High cost and inefficiency of ports.
- Poor quality of rail in the transportation of general freight.
- Insufficient intermodal facilities.
- High pipeline transport cost.
- High road freight cost due to price control and taxes on input costs.

References

Alford L.P. & Bangs J.R. (eds.) 1955. *Production Handbook*. Ronald Press, New York.

American Airlines. 2005. *AA Cargo Rate Display*. www.aacargo.com.

CSIR. 2004. *The First State of Logistics Survey for South Africa*. www.csir.co.za/transportek.

Davis, H.W. 2004. *Davis Logistics Cost and Service Database*. http://www.establishinc.com/davisdatabase_info.asp

Dehlen, G.L. 1993. *Efficiency of Transport to Enhance South Africa's International Competitiveness*. Research Report RR92/078. CSIR, Pretoria.

Delaney, R.V. 2003. *14th Annual State of Logistics Report*. Cass Information Systems, Inc. US.

De Mendonca, F.F. 2005. *Explaining the Change in Freight Modal Split in Great Britain*. University of Leeds. www.its.leeds.ac.za/teaching/posters/FabioMendonca.html.

European Union. 2005. *Freight Management and Operations: Summary Report*. www.europa.eu.int.

Hong Kong Special Administrative Region Government. 2004. *Hong Kong Facts: The Port*. Information Services Department. http://www.gov.hk/mardep, December.

Monitor Group. 1995. *Global Advantage of South Africa Project. Phase One Findings: National Industrial Strategy Issues*. Presentation to the Parliamentary Standing Committee on Trade and Industry, and the Media. Conducted for the National Economic Forum.

Pretorius, J. 1997. *The Effect of Conditions in the Transport Sector on the Competitiveness of South African Industries in Foreign Markets*. M.Comm (Transport Economics) thesis. University of Stellenbosch, Stellenbosch.

Raath, L. 2004. *Transport World Africa Yearbook*. Shelly Shorten Publishers.

Radebe, J. 2005. *Address at the Launch of National Freight Logistics Strategy*. http://www.info.gov.za/speeches/2005/05100612151006.htm

Republic of South Africa. 1999. *Moving South Africa: A Transport Strategy for 2020*. Department of Transport.

Republic of South Africa. 2005(a). Address of the President of South Africa, Thabo Mbeki, at the Second Joint Sitting of the third Democratic Parliament, Cape Town. 11 February.

Republic of South Africa. 2005(b). *Breakdown of Fuel Price*. Department of Minerals and Energy.

Reynders, H.J.J. (chairman). 1972. *Report of the Commission of Inquiry into Export Trade of the Republic of South Africa, Chapter 12: Transport and Related Matters.* Pretoria, Republic of South Africa, Government Printer.

Road Freight Association. 2003. *Vehicle Cost Schedule*. Pretoria. March.

Smith F.A. 1986. *Transportation in America*. Transportation Policy Association, Washington D.C.

South African Airways. 2005. *Annual Report*.

South African Reserve Bank. 2004. *Quarterly Review* (March). Pretoria.

Spoornet. 2004. *Annual Divisional Report*.

Statistics South Africa. 2003. *Land Freight Transport*. Statistical release P7142, Pretoria, South Africa. December.

TerraNova. 2005. *Supply Chain Forecast*. Barloworld Logistics. Corporate Head Office, Johannesburg.

The Economist. 2005. *Emerging market indicators*. 23 April.

United Nations. 2004. *Productivity in Rail Transport.* Economic and Social Council, Working Party on Rail Transport. www.unece.org/trans/doc.

US Department of Transportation. 2004. *Freight Facts and Figures*. Federal Highway Administration, Office of Freight Management and Operations.

Zacharias, D.W. 2005. *Terasin Pipelines (Trans Mountain Inc.) Petroleum Tariff*. Economic and Regulatory Affairs, Terasin Pipelines (Trans Mountain) Inc.