MOVING SOUTH AFRICA

A PROJECT OF THE DEPARTMENT OF TRANSPORT

Towards a Transport Strategy for 2020

Report and Strategic Recommendations

7 September 1998

Draft for Discussion

This document provides an outline of a presentation and is incomplete without the accompanying oral commentary and discussion.

CONFIDENTIAL

Koos Smit

PREFACE

This document summarises the 14 month's of research, analysis and process that constituted the *Moving South Africa* project of the Department of Transport.

The source documentation for this report consists of some 30 separate reports in overhead-slide presentation form, all of which are available at the Department of Transport through its Policy, Strategy and Implementation Branch, under the aegis of which the work was conducted. Much of this material has been distributed to members of the MSA Steering Committee (comprising a broad range of representatives from the government and the private sector) and other parties consulted during the project.

In the interests of brevity, detailed sourcing and referencing information has not been specifically brought into this document, but is incorporated by reference. The source documentation (the presentations referred to above) includes specific sourcing in footnotes on each slide.

This document begins with a review of the *Moving South Africa* process and the situational audit that justifies the need for a strategic review. The report covers the performance gaps and strategic challenges facing the following components of transport in South Africa:

- The Freight Transport System,
- The Urban Passenger Transport System,
- The Rural and Long Distance Passenger Transport Systems,
- The Tourism Passenger Transport System,
- The Special Needs Passenger Transport System,
- Cross-Cutting Issues affecting the long-term sustainability of the transport system as a whole.

The situational audit is followed by an exposition of the detailed strategies for each of the above customer groups.

The report concludes with a discussion of the benefits flows arising out of the project and the next steps envisaged.

The objective of the *Moving South Africa* project is to frame the ongoing strategic debate around the data and conclusions laid out in the report which follows and, ultimately, to align all stakeholders behind this strategy as it moves into implementation.

"The world that we have made as a result of the level of thinking we have done thus far creates problems that we cannot solve at the same level as they were created"

Albert Einstein

Moving South Africa: A Transport Strategy for 2020
Report and Strategy Recommendations

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1. FOREWORD: LETTER FROM THE MINISTER

Fellow South Africans,

It is with a great deal of pride that we offer the report, *Moving South Africa: A Transport Strategy for 2020,* to the South African public. This constitutes the proposal of my department for the transport strategy for the country over the next 20 years.

It is the culmination of a process which began when the first democratic government was elected in 1994, through a series of Green Papers and White Papers, and extensive consultation with stakeholders at each step in the process.

When I was appointed Minister of Transport, I – like my colleagues in the Cabinet, Provincial, and Local government – confronted an inheritance which was that spawned of an old order, which worked to the advantage of the previously privileged and powerful. This old order excluded vast sections of the population from basic services and was driven by a logic of spatial separation and dispersion, and depended for its survival on continuing support from an overburdened fiscus. In the current context, the entire system is not sustainable over the long run.

We in the National Department of Transport were confronted with the task of redesigning our distorted inheritance to meet a new set of national goals – goals based on the democratic principle of meeting basic needs of *all* citizens, supporting industrial growth, serving the rural impoverished, harnessing the economic potential of our region, and facilitating job creation and growth of SMMEs.

We articulated our needs, objectives, and priorities in the Transport White Paper of 1997 after a lengthy consultative process which involved not only the transport industry itself, but also the customers of the system as well. We knew what we wanted to do, but the question we faced was *how*. How were we to simultaneously meet basic needs, develop a sustainable transport industry, serve the needs of freight customers and urban commuters, rural passengers and international visitors, domestic tourists and long-distance passengers, all within the constraints of a tight fiscal discipline – and based on a system designed often for a very different purpose?

We set up the MSA project with that mandate. I am proud, after 14 months of detailed analysis and widespread consultation, to offer this report as our answer to the question. I have insisted from the beginning that our process and our conclusions be data-driven, and be based on in-depth analysis of the facts, and I trust that you will agree that we have kept to that promise. From these facts we have developed the strategy, and this report is proposed as our strategic framework for the next twenty years. It provides our answer to how we will meet the needs of the nation and the needs of our transport users.

It became clear early on in the strategy development process that tough choices were needed: in a country with limited resources (in terms of skills and capital) and many diverse needs, we had to ensure that all investments – whether from the private or public

sectors – would be of maximum benefit to transport users, and sustainable into the future. We could not serve everyone's needs to the same level, and so were compelled to proritise which needs to serve. As I wrote in my foreword to the White Paper, *"In the final analysis government has to make its own decisions bearing in mind what serves the national interest"*.

We were not, and are not, responding to a crisis in the transportation system. In general, the system is working. But if we look out ten years it becomes apparent that there will be a crisis. The quality of our roads is declining and there is insufficient capital available to maintain and upgrade them. Where operations are currently breaking even, they will not do so much longer. Where our export costs are competitive now, they will rise as our trade flows begin to balance. By 2020, 3 million people will not be able to afford any transport at all.

Our strategy is to invest time, effort and resources now to ensure we do not face a crisis in the future. And, if we act swiftly and efficiently, we can build and reinforce the capacity of the industry itself to make the investments necessary to continuously improve the services we offer to our passengers and goods.

We are under no illusion that the challenges are daunting and that to implement the recommendations of MSA requires determined, coordinated action from the government. It will also require similar levels of courage and actions from the parastatals and private sector firms, from labour and others. We recognise that the transition from old to new will be painful for us all, but the vision contained in this document – to which all stakeholders have contributed – should inspire us to continue moving toward our goals.

We in the DoT invite you, from wherever you are, whether a beneficiary of the strategy or implementor of it, to discuss the strategy with us. Our door is always open. But before you come in, consider the one question we will always ask: what can you do to help us overcome the obstacles to its implementation?

For our part, this report represents the first act in removing those obstacles. We have just begun. We shall deliver.

Mac Maharaj
Minister of Transport

2. EXECUTIVE SUMMARY

Background

The *Moving South Africa* project (MSA) was designed to produce a data-driven program for strategic action that extends the short to medium-term *policy* formulation documented in the Transport White Paper into a long-term *strategic* formulation embodying the sets of trade-offs and choices necessary to realise the vision as set out in the White Paper:

" Provide safe, reliable, effective, efficient and fully integrated transport operations and infrastructure which will best meet the needs of freight and passenger customers at improving levels of service and cost in a fashion which supports government strategies for economic and social development whilst being environmentally and economically sustainable."

The MSA project, one of the most ambitious of its kind in the last 40 years worldwide, has been highly consultative in its process and comprehensive in its scope. It has thrown into stark relief some very complex choices and trade-offs, and the expectation is that not everybody will be comfortable with its findings. Indeed, the work has demonstrated that a process of change must take place to satisfy the needs of customers and the nation. This will require the government and all enterprises in the transport sector, in the short and longer term, to undertake a process of transformation and refocusing that will be, by its very nature, uncomfortable. In this regard, the Minister of Transport, working through Cabinet and the Ministerial Conference of Ministers of Transport (Mincom) retains the final authority over the choice of strategy. The government is committed to a fundamental change in approach, sending unambiguous signals to parastatal and private operators about what will be in their long-term strategic interests.

The strategic vision for transport is grounded in a refined understanding of the impact of the far-reaching change in national objectives resulting from the transition to democracy following the 1994 elections. The new emphasis on creating sustainable employment in a growing economy driven by a vibrant services sector and manufacturing led exports, is a complete turnabout from the import-substitution policies it replaced. Previous policy delivered an inherited legacy around which was moulded a transport system and infrastructure whose configuration now stands in fundamental misalignment to the new national objectives. This necessitates a shift in institutional and firm level priorities and regulatory and institutional structures to facilitate and manage the task of achieving alignment with respect to these new national objectives.

A similar shift in emphasis is also necessary in the area of passenger transport where the importance of public transport provision will need to be increasingly emphasised, and the focus of those services changed to recognise the likely evolution of the needs of the customers of the transport systems. All of this is taking place in a global context of falling trade barriers, increasing linkage to the global economy and increased competition for global markets. Within transport, global liberalisation and deregulation trends, and the

globalisation of customers and carriers together with global sourcing and the rising importance of information technology, add impetus to the need for change.

It is not surprising that, when customers were interviewed as to their needs and their satisfaction levels, they described a system that did not meet their evolving requirements. The facts on the ground, they said, reflect old priorities and objectives. Urban passengers described a system oriented towards commuting in from segregated townships, racially separated bus systems and unregulated taxis. Freight customers saw biases towards import substitution and against export competitiveness of value-added products, a failing rail service, an inefficient port system and, uniquely, world class bulk freight systems. Roads were seen as high quality and cheap, supporting increasing car dependence. At the same time, destructive competition between transport modes on the roads, and between road and rail, further undermines the efficacy of the public transport system. Rural roads were seen as woefully inadequate, and provision for special needs customers as very weak.

A review of the providers showed clearly that the system as a whole has been systematically underinvesting in capital replacement with most modes near the outer limits of the useful lives of their assets. This can be traced back to uniformly poor profitability save in those firms that were beneficiaries of the old policies – particularly the unregulated monopolies. In each of these cases, their profitability has been diverted into cross-funding the losses in other areas of the transport system, and has been unavailable for appropriate reinvestment. In a similar vein, the application of public funds to transport infrastructure has followed a pattern of previous choices, prioritising commercial and private car users in general over public transport customers.

However, the application of funds behind this broad prioritisation avoided focusing resources behind specific customer segments, resulting in an inherited averaging of spending across the road network, no part of which enjoyed full re-investment to the level required for sustainability. This highlights the key operational concern framed by the customer and provider research: the ongoing sustainability of the sector as a whole. While this is not an immediate crisis, it is clearly one in the making. The immediate objective of the strategy is to avert this crisis by creating a program of strategic action that prevents its evolution into a fully blown crisis in the next few years. The key question is how to manage through the constraints of human and financial capital and timing, in order to create sustainability in the reconfigured system.

The Role of Transport

The strategy itself is premised on a clear understanding of the role of transport. At a minimum transport must function as a guarantor of national integration. The position taken by MSA is that it should be viewed as an enabling industry, with the Department of Transport acting as a provider department within government, framing the strategy around delivery against customer goals. Transport is a critical input to other industries, and the goals of the sector should be to meet the national and social (non-transport) objectives of the nation. This delivery is to take place within the context described above,

and so necessitates a program of strategic action that focuses first on unwinding the old legacy, then on recreating the transport platform in service of the needs of customers and **the nation**, and finally, on the development of differentiated, leading edge capabilities to suit the specific needs of individual customer segments.

Customer Research and the Strategic Challenges

The project initiated a substantive review through primary research of the national and customer objectives. The team evaluated the performance of the transport system against these objectives and identified the critical gaps, or strategic challenges to be confronted. These challenges clustered into two categories: Those outside the transport system requiring prior choices to be made by others outside the transport sector, and those within the system requiring choice and action from the NDOT, or provincial or local transport authorities, or providers or stakeholders. The focus was on sub-optimal aspects of the existing system rather than on its good points which require little action other than integration into the system as it changes.

Customer demand for **freight** transport services is currently highly concentrated on two bulk export flows, one large general cargo export flow between Gauteng and Durban and a limited number of other midsized flows, including those into the SADC region. The majority of customers are geographically concentrated requiring transport from dense industrial locations to destinations fed by relatively dense transport corridors. There is significant evidence that the freight system is further consolidating around these high volume corridors. Customers revealed a significant level of dissatisfaction with key aspects of the system, particularly with rail general freight prices and service and with service and prices in the ports. Other than in export bulk freight, performance against international benchmarks was poor. Customers articulated overall goals for higher reliability on almost all modes, and better pricing for rail and ports. The strategic challenges identified were consolidated into two specific areas of concern:

- Lack of support for export competitiveness; and
- Low levels of system sustainability.

The former issue boiled down to a lack of alignment for value-added ocean-bound exports and barriers to cross-border SADC traffic. The system sustainability challenge was focused on the high non-user cost of domestic freight – principally in the form of externality costs like safety and environmental costs and road building and maintenance – and the deterioration of overall system quality.

Urban passenger customers were segmented on the basis of specific needs, and specific issues were generated in respect of each segment. A large number of "Stranded" passengers were identified, projected to grow to well over 3 million by 2020. Significant system performance gaps were identified affecting other segments as well. The core challenges that emerged were:

- The lack of affordable basic access;
- The ineffectiveness of the public system for commuters and other users;

- The increasing dependence on cars within the system; and
- The impact of past patterns of land use and existing planing and regulation of public transport.

Research into **rural passenger** needs yielded two core challenges: The lack of integrated provision of infrastructure and the absence of a framework for rural roads prioritisation. For **long-distance and tourist customers**, the key strategic challenges were to clarify the transport capacity requirements emerging from the nascent tourism strategy and to prevent transport from bottlenecking tourism growth. **Special needs customers** confront the challenge of balancing the cost of improvements required to make the system accessible with the goal of providing full access on a basis of equal risk and equal opportunity to that of fully-abled people.

Cutting across all customer segments are the challenges of :

- Building the long term financial sustainability of the roads network,
- Balancing the risk alignment and affordability in the critical areas of environmental concerns and transport safety,
- Enabling the system to create human capacity for new roles in the sector, and aligning training to this, and
- Dealing with the lack of sustainability in the system.

Strategy Recommendations

The guiding premise of the strategy is the satisfaction of the customers of transport in the service of fulfilling the national objectives. The strategy works to propagate a detailed vision for transport, a set of ideas that integrates the needs of transport customers and policy makers, while ensuring that the system can deliver on these needs in a sustainable fashion into the future. This integrated vision is critical to guide implementation in the decentralised delivery environment in South Africa, yielding a system which is aligned around its core choices. The choices break into three tiers – those about the breadth and reach, or density of the system, those about the desired scale of the system and the optimal role of modes, and those about enhancing the platform for transport providers.

Decisions about density and optimal role of mode, taken together, will determine the extent and size of the fixed cost backbone of the transport system. These choices constitute the principal output of the strategy since they pertain to the task of overcoming the enormous challenges created by the dispersed spatial industrial and residential economies. The strategy to consolidate the core transport assets in the economy such that they provide a low cost, high quality and affordable backbone for the system, set the stage for the service of the social goals of the nation. MSA seeks to create a flow of benefits that provides firms with a basis for improved levels of service underpinned by long term sustainability.

In principle, the systems benefits must be reinvested in bringing lower cost and higher service transport to customer segments. Institutional and regulatory structures are viewed as an outcome of choices made around the density and scale of the system, as a

consequence of choices which require a playing field within which they can become effective. The critical issue, faced with these choices, is that those that relate to the system itself – density and scale – and which operate across the system, have no specific body responsible for decisions in relation to them. Given their complexity and consequences, it is critical to ensure that the decisions are taken and then signaled clearly to the players in the sector. To this end, there is a need for a locus of strategic integration which can deliver the system level decisions required, negotiate the mandates deriving from the national objectives, integrate the players responsible for managing the strategic agenda with those who act on the ground, and have the capacity to negotiate agreements between providers of transport infrastructure and operations to ensure that individual decisions which have system impacts are taken not only in the interests of the individual player, but also other players and the system as a whole.

In defining these principles, MSA recognises that an activist, developmental government has a funding role in respect of investments in pursuit of national objectives. The social returns from various investments must properly be viewed as economic returns in pursuit of key national objectives. Investments of this nature – key strategic allocative choices – must be transparent, measurable and accountable for specific asset allocation decisions. It is critical that the impact of decisions of this order be limited to their particular development arena, and that clear signals of value are transmitted into the system, and in no way distort customer decision making elsewhere in the system.

The term 'ring-fencing' is used on occasion in this report to refer to such clearly defined allocative choices in order to emphasise the point that such choices – while valid and important in meeting specific national objectives – do not compromise the sustainability of other parts of the system.

Realising the White Paper Vision

Combining analysis of the customer needs and optimal modal economics suggests an asset configuration around the flows of goods and people modeled out to 2020. These flows move along high volume corridors for freight and passenger transport that constitute the basis of the low cost backbone for the system. The goals for the vision are to recreate a system that has the lowest practical systems cost at maximum affordability, with improved reliability and increasingly differentiated services, set upon a dynamic platform. Three key thrusts ground the vision:

- High volume corridors,
- Sustainable operations,
- Improved efficiency.

The logic of volume concentration to drive down national transport systems cost and improve service underpins the vision. Volume concentration increases capacity utilisation and lowers unit cost. The reduction in the complexity of the system to a limited number of high volume corridors allows for higher levels of service to customer segments through the focus and concentration of limited skills and financial resources and leverages investments in the system. Further, the focusing of passenger and freight traffic

facilitates the deployment of assets in an appropriate and sustainable fashion, while the integration of the corridors and their feeders further reduces cost and increases responsiveness to customer needs.

The critical lack of sustainable transport service operations must be turned around. This necessitates deploying the appropriate modes in the right places in the economy. Individual modes are currently deployed pursuant to the old national objectives, and with scant regard for evolving customer needs. Levels of utilisation of public transport assets are low, resulting in high fixed costs in the system, and within the corridor vision, these fixed costs will be brought down, and utilisation levels driven upwards. Flows within corridors must be enhanced, and modes redeployed at their point of best economic utilisation. Flexibility in the system should be built by moving to a greater mix of higher variable cost options in order to accommodate identifiable trends into the future, avoiding new high fixed cost options other than commuter rail line extensions within corridors. Providers will be encouraged to identify their target customer segments, and invest behind them to satisfy their specific needs.

At the level of the platform itself, the role of government is more circumscribed – to facilitate and enable high quality firm level choices. This involves removing the obstacles blocking the logic of the system. Government must unwind the legacy by removing the inappropriate old order institutions and rules currently in place and build the transport platform by resetting the playing field to the new rules, thereby creating a sustainable and actionable base for the inherent economic logic of high volume corridors and their feeders. This is a process which is best thought about as the 'creative destruction' of the old order, simultaneously replacing it with a new set of rules that delimit the new playing field for firms. Once this is done, the goals and intent of the vision must be clearly signaled by resetting the rules of the game, creating transparent economics within transport and enforcing the new rules. All of this informs and enables appropriate firm level choices.

Firm Level Choices

At the level of the firm , it is necessary to integrate choices about the creation of value through productivity, building the platform and developing the capacity to innovate and upgrade behind customer segments. These choices will allow firms to succeed or perish by their decisions. The firms that change their games to abide by the new rules will prosper.

Summary by Component

Passenger

The urban strategy focuses on three key strategic actions:

- **Densify in corridors and nodes to achieve economies of scope**, effectively turning around the current trend towards dispersal;
- **Optimise modal economics and service mix** through infrastructure investment to support the corridors, and by selecting the optimal mode based on the

cost/service trade-off. This involves also facilitating differentiated service and choice wherever possible, but with subsidisation only for the optimal mode, if at all. Tough road space management is necessary to prioritise public transport and subsidies should be targeted at affordable access to the optimal mode.

- **Improve firm level performance** through competitive tendering to the private sector with incentives for productivity innovations, effectively regulating all modes, especially taxis, and improving sustainability through capital investment.

The strategy will substantially improve systems performance but will require overcoming difficult obstacles. It is likely to take 10-20 years to unwind the legacy, but the results will be better system performance in terms of access, travel times etc, and the satisfaction of customer needs, particularly those of the disadvantaged. Key obstacles will be the lack of coordination within and between levels of government and lack of institutional capacity.

The strategic actions for rural and tourism passengers begin with the formulation of a clear vision and strategy in each area. In each area there appears to be a need to develop additional data to inform choice. Until strategy formulation is done in a manner that sends clear signals of priority to Transport, nothing other than general facilitating actions can be taken in transport. Each of these is a matter of urgency for government given the importance of each of these groups to GEAR and the RDP.

Special needs passengers also require a set of actions that will get the ball rolling. A common set of objectives must be developed, the data gathering effort completed, the costs to serve identified and allocated and these requirements incorporated into the overall vision for public transport infrastructure and operations.

Freight

There are three strategic actions required in the freight system:

- **Build density** in the transport system through focusing freight flows in select corridors by supporting and reinforcing current trends to build the backbone of the system, at the same time as reducing complexity and investment requirements.
- **Build economies of scale** within the different modes by focusing the role of the modes, maximising scale economies within each mode and offering differentiated services where economically sustainable,
- **Improve firm level competitiveness** by removing obstacles, improving integration, ensuring sufficient reinvestment to maintain quality infrastructure and operations, restoring price and value signals between customers and providers and building an industry platform which drives differentiation and innovation,

A number of actions cut across the freight system as a whole. These include making the national objectives clear, aligning with the industrial strategy, focussing large infrastructure investments, creating customer facing systems, building logistics capabilities and encouraging differentiation.

At the modal level, in ports the actions are to identify core container ports and prioritise infrastructure investment around these. Other ports should be financially stand-alone without drawing volume away from the core, and must be developed towards special purpose objectives which customers will fund. The rail system should focus on the core lines, invest in operating efficiencies there and separate and isolate separable services for sale or concessioning. The road freight network must be defined and investment managed with charges for road use and externalities and strong enforcement, in particular of GVM limits.

Cross Cutting Issues

The principal issues that cut across all modes and all customer segments are the role and activities of government, and financial sustainability.

Government is currently acting in a non-integrated fashion, in part due to the complexities of the transition to the new constitutional dispensation which devolves key decisions to the provincial and local spheres. Both within and across the spheres of government, the integration necessary to deal with achieving national objectives, and specific choices relating to issues like land use, is insufficiently present. In consequence, government will have to create a workable framework for cooperative governance that enables the necessary decision making. This should be accomplished by locating the decision rights on specific issues where the capacity to make and enforce the decisions exists. This will involve the creation of institutions that have this capacity, either formally or on an ad-hoc basis. Many of the decision rights are currently split within and across the spheres of government, and a voluntary pooling of such rights in inter-departmental teams across the spheres of government will be necessary. The objective is to work towards the intent of the Constitution, but to do so within a context that overcomes the obstacles to action which flow from an undercapacitated collection of institutions.

Increasing the level of organisational and human capacity is equally critical to the overall strategy. The NDOT is already involved in capacity building initiatives within government, and is beginning to explore the possibilities for increasing the cross-pollination of ideas between public and private sector institutions. To this end, the MSA analysis has paid close attention to transport-specific human capacity building initiatives in other parts of the world. The strategy also recognises that there are different human capacity constraints at different levels of government, with some parts of government providing support to others (particularly those provincial and local governments experiencing the greatest capacity constraints) on a voluntary basis as they begin developing the necessary skills and capabilities to take on the responsibilities devolved to them.

The financial constraints in the system demand similar attention. To this end, where actions in the sector do not relate to establishing the low cost backbone, but work towards the development of specialised activities outside of the concentrated core system, these will have to be self funding, and stand alone. The provision of choice to customers is one of the key long term goals of the strategy, but not at cost to the core system. Provided that

the funds available to government are directed to the core, it is likely to become self sustaining while, at the same time, working to upgrade and extend services. Any other activities will have to be funded by customer revenues and self-generated profitability. In this fashion, customer needs for differentiation will be served where they add value to the customers, thereby further enhancing the overarching objective of increasing service to customers. The only customers systematically favored by the system will be those who have no access to the system by reason of affordability or geography. The incentive to expand into areas within the defined corridors must be there, as must disincentives to move outside.

Benefit Flows

At the very highest level, the distribution of benefits from the strategy can be broken into four parts:

- The creation of greater value for customers,
- The improvement in industry profitability and reinvestment,
- The lowering of the fiscal burden, and
- The minimisation of externality costs.

The impact on the competitiveness of the customers of transport will be substantial, and thereby the strategy will contribute to the creation of a large number of sustainable jobs in the economy. Further, post-consolidation, the key providers of transport services will grow their employment bases as they grow with the economy. The opportunities in low barrier to entry businesses, stemming from the consolidation of the core in areas that feed the backbone, will be substantial, and the benefits of increased social integration that the strategy enables will be an important underpinning to the social goals of government.

Conclusion

A major issue to deal with is the need to front-load funding for transformation such that the benefits outlined above are unlocked as soon as possible. It is here that the strategy is limited by the art of the possible, and where trade-offs and timing decisions will have to be made over the next few years. The implementation program will have to be staged to match outflows to availability. Serious consideration must be given to getting right the balance between pain and gain in the system as the hard realities of fiscal discipline collide with the investment character of the transformation strategy. The returns to the system and the nation will be long term in nature, and the costs immediate. It is vital that a strategic perspective be brought to bear here as the reflex will be to avoid current pain. The framing of the full implementation program is the next step in the work program.

It should be obvious to the reader, but bears stating, that the entire process will be catalysed by each provider of transport services reassessing their approach to their business in the light of this strategy, and moving as quickly as possible to shoulder their share of this burden. What must be equally clear now is that securing advantage by lobbying government is a thing of the past, and that the rules of engagement with government on transport issues will be defined by this strategy. The Department of

Transport has clarified its signals of where value lies in the transport system, and how it intends to act in relation to that system. It is mobilising to deliver. Firms must now make choices and act on them, in their own interests and that of the nation.

VOLUME I: BACKGROUND, CONTEXT, AND FRAMEWORKS

3. PROJECT ORIGINS AND OVERVIEW

What is *Moving South Africa* ?

The National Department of Transport began the *Moving South Africa* project in June, 1997. The project encompassed a 14 month process to take the vision developed in the 1996 White Paper and develop a twenty year strategy to realise it. This report is the final summary of that process and its outcomes, describing both the process and the recommended strategy for the South African transport sector.

Origins of *Moving South Africa*: The White Paper

In September 1996, the White Paper on National Transport Policy was approved by Cabinet and Parliament. This was the culmination of an eighteen month policy review process led by the National Department of Transport (NDOT) involving intensive consultation with stakeholders through plenary meetings, workshops, policy working groups and public comment on a Green paper. In the end, the White Paper, whilst recognising that it could not satisfy the views of every stakeholder, nonetheless represented a considerable consensus across the transport sector.

Perhaps the single most important part of the White Paper is the articulation of a vision for the transport system. This vision describes the mission of the National Department of Transport today, and forms the foundation for all of the work in *Moving South Africa*. This vision sets the overall objective to:

> *"Provide safe, reliable, effective, efficient, and fully integrated transport operations and infrastructure which will best meet the needs of freight and passenger customers at improving levels of service and cost, in a fashion which supports government strategies for economic and social development whilst being environmentally and economically sustainable."*

In addition to describing a vision for transport in South Africa, the White Paper set a number of strategic objectives for the system as a whole and for individual modes. Examples of these objectives include "enhance the quality of freight transport services by providing transport customers with a safe, secure, reliable, and cost-competitive system" , "establish sound intermodal co-ordinating structures", and "ensure that public transport is affordable, with commuters spending less than 10% of disposable income on transport".

In addition to the specific strategic objectives formulated for each mode, infrastructure, and road traffic and safety, the White Paper also generated ten ***Key***

Thrusts, or guidelines for any future policy and strategy formulation. The White Paper suggests two types of Key Thrusts: those that are means to achieve goals, and those that are goals themselves:

Means:

- **Skill & Technology Building:** a key requirement of the transport industry is to build the skills and technology available to the industry
- **Broaden Participation in the Economy**: create wider and more representative ownership of South Africa's transport assets.
- **Ensure Competition:** the transport strategy should build competition within the industry to ensure the highest levels of service at the lowest levels of cost.

Goals

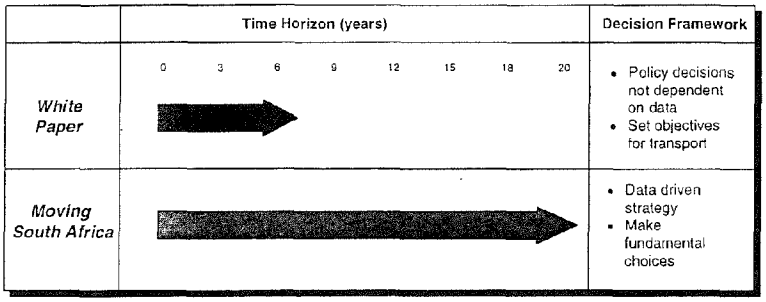
- ***Customer needs:*** the transport strategy must be based on a data-driven understanding of the needs of different customer segments, their service levels and cost requirements.
- *Investment objectives:* national investments in infrastructure and operations should provide the required returns, be they economic returns to the country, financial returns to the investors or social returns to the people of South Africa.
- *Policy requirements:* the transport strategy should enable the achievement of national and regional policy objectives as well as the achievement of objectives of other arms of government.
- *Integration:* the strategy should identify where regional, modal and institutional integration can be enhanced and facilitated
- *Safety:* the safety of people and security of goods is an essential requirement.
- *Environmental sustainability:* the impacts of various modes and transport alternatives should be measured for their environmental impact
- *Low Cost for Designated Level of Service:* the transport strategy must recognise that various customers have different needs and strive to meet those needs at the lowest possible cost.
- *Meet Basic Needs:* transport has an impact on the key goals of the Reconstruction and Development Programme of meeting basic needs of the people of South Africa.

The White Paper set out the ten key thrusts because the NDOT recognised the limits of the White Paper process. Whilst, the White Paper set out a vision, strategic objectives, and policies, it did so based on a consultative process and a short- or medium-term time horizon. Because the policy review process was an effort to set the agenda and to provide a policy framework for government at all levels (in order to respond to the recent dramatic changes in the country), the White Paper process did not depend on data-driven conclusions nor look over the long-term horizon for its work (see **Figure 1**). As such, in the White Paper itself, the NDOT acknowledged that

> *"in the longer term, specific goals, strategies, and action plans to proactively lead the South African transport system into the desired vision*

of the future will be developed through the Department of Transport's 'Vision 2020' *project'*

Figure 1: The Scope of the White Paper and *Moving South Africa*



The *Moving South Africa* Mandate and the Connection Between Policy and Strategy

The *Vision 2020* project became '*Moving South Africa'*, which commenced in June 1997 with a mandate to

> *"develop a strategy to ensure that the transportation system of South Africa meets the needs of South Africa in the 21st Century and therefore contributes to the country's growth and economic development."*

By mandating *Moving South Africa* in this way, the NDOT charged the project with the additional responsibility for helping to break new ground in government approaches to long-term strategic issues. For this reason MSA undertook to create, and make clear, the relationship between policy and strategy. Since the White Paper had already set out the vision, MSA's mission became to determine how – in an environment of limited resources, capacity, and time – to implement that vision in a way that is consistent with the key thrusts articulated above. For this reason it became necessary for the strategy to verify the White Paper objectives on the basis of hard data, and to reconcile or choose amongst some of the sometimes competing objectives of the White Paper.

Perhaps most importantly, the strategy was also required to create a context for action within which to achieve the White Paper objectives. In all cases, however, the *Moving South Africa* strategy represents an extension of the White Paper process which set the objectives and guiding principles. The strategy does this by making difficult choices, based on data, about how to meet those objectives and by considering the delivery mechanisms by which those choices are translated into reality for government , customers, and service providers.

Because the strategy covers a twenty-year time horizon, it must be sufficiently durable and sensitive to respond to changes that will inevitably occur in the transport environment and within the transport system itself. Global transport trends, population

trends, economic policy shifts, national income growth, changes in manufacturing processes, or new global environmental regulations could all make some of today's data and assumptions outdated. Although the strategy is based on 20-year forecasts, it nevertheless must set up systems and institutions that can read the environmental signals and respond to them in a coherent fashion within the context of the strategic vision. This vision, and the accompanying propagation of a set of transport strategic principles, is what ultimately creates the durable connection between strategy as it is developed and actions that are implemented. The strategy – based on a shared understanding of the data – provides a shared vision, clear choices, and consistent decision rules for all participants in the industry, including

- Public and Private sectors,
- National, Provincial, and Local government
- Transport and other Ministries.

Comparison to Other National Strategies

In recent years, several other countries have developed comprehensive national transport strategies. At the beginning of the project, *Moving South Africa* benchmarked three[1] of those projects to learn lessons applicable to a national transport strategy process. The countries examined were:

Country	Strategy Title	Year Complete	Duration
Argentina	*Plan Nacional de Transport*	1982	30months
United States	*Moving America*	1991	24 months
New Zealand	*National Land Transport Strategy*	1998	24 months
	vs.		
South Africa	***Moving South Africa***	***1998***	***14 months***

The benchmark projects had varying goals, including infrastructure maintenance and expansion, supporting national economic growth, promoting environmental protection and safety, and integration of regional and national transport planning. Each of the strategies focused principally on land transport issues, covering marine and air modes only insofar as they linked intermodally with the land transport system. *Moving South Africa* is therefore unique in the breadth of its ambition – the mission of *Moving South Africa* required coverage of all major modes over a twenty year time horizon. Despite the broader scope, MSA also finished in the least time.

All but the New Zealand project used substantial macroeconomic forecasts and quantitative modeling. Neither the U.S. nor the New Zealand strategies addressed specific projects; rather, their focus was on setting the framework for decisions and devolving the responsibility for specific project-level decisions to local and regional

[1] MSA also examined a Dutch strategy effort, *Second Structure for Transport and Traffic* (1989), but did not receive sufficient information to make a full comparison

planning bodies. In keeping with these other strategies, *Moving South Africa* also does not prescribe specific projects but rather focuses on creating a strategic vision and framework, as will be documented later in this report. Despite the similarities, it was clear from the benchmarking that South Africa undertook to accomplish the most ambitious, comprehensive, leading-edge work in transport strategy in many decades in any part of the world.

4. THE *MOVING SOUTH AFRICA* PROCESS

The Minister of Transport, working through Cabinet and the Ministerial Conference of Ministers of Transport (MINCOM), retained final authority over the strategy choice. However, as with the White Paper process, *Moving South Africa* employed a highly consultative process in arriving at the final strategy, in order to ensure as high a degree of consensus as possible. To this end, the Department formed a 63 member Steering Committee (see **Annexure 1** for members) to provide input from industry, customers, and other functions of government in all three spheres.

The Consultation Process

The consultation process has been extensive, and many national government departments were included on the Steering Committee of the project, including the Departments of Trade and Industry, Minerals and Energy, Environmental Affairs and Tourism, Public Enterprises, State Expenditure, Land Affairs, Agriculture, Constitutional Development and Provincial Affairs, and Finance. Representatives from the parastatal sector also participated in government briefings and the Steering Committee. In addition, the MSA team consulted with various Ministers and senior national government officials at critical points before finalising the strategy. Selected provincial and local government representatives participated regularly in the Steering Committee, and the project provided regular briefings at sessions of MINCOM and COLTO (Committee of Land Transport Officials). Members of the Southern African Transport and Communications Committee (SATCC) of the Southern African Development Community (SADC) also participated in Steering Committee meetings, ensuring that the regional perspective was taken into account.

Private sector representation on the Steering Committee included operators from all modes, customers of the system, civic association representatives, advocacy groups, leaders of key transport labour unions, and academic experts on transport. In addition to plenary sessions, Steering Committee members met with the team prior to major presentations to help test data and provide additional information, and check assumptions and conclusions. Steering Committee members who wanted to contribute in more depth were offered the opportunity to second resources to the project. In addition, consultation with the private sector extended well beyond Steering Committee membership.

In the first phase of the project, the team identified over 300 stakeholders, who were then invited to plenary sessions, small group, or individual meetings in order to solicit their opinions on the future direction of the transport system. Over 160 of them participated in the process, providing essential input to the project at the critical early stage.

The Team and the Data

The project team was led by the Department of Transport, with analytical support from two international consultancies, Monitor Company and Mercer Management Consulting.

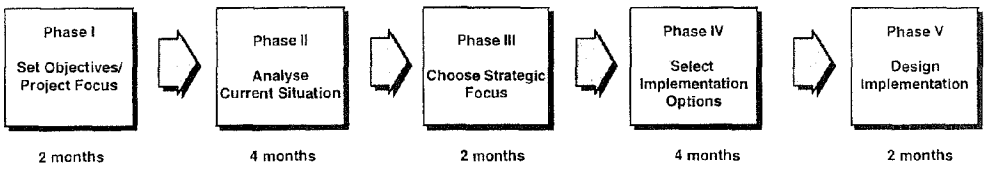
The team consisted of members of the NDOT, consultants, the Council for Scientific and Industrial Research (CSIR) and seconded personnel from the South African Bus Operators Association (SABOA), various Transnet divisions, the KwaZulu-Natal provincial Department of Transport and Public Works, the Northern Province Department of Transport, the Transport and General Workers Union and the Road Freight Association. (See **Annexure 2** for a list of all team members over the course of the project.)

The team gathered data from multiple sources to form the underpinning of the analytic work. These sources include publicly available statistical, economic and financial sources, organizations represented on the Steering Committee as well as purchased data or original survey research performed for the project.

Project Timing

The project was organised into five phases over a period of 14 months. These five phases are summarised in **Figure 2** below

Figure 2: The Five Project Phases



Guiding Principles

For the strategy to serve effectively as a set of guiding principles throughout the system (including public and private sectors, different levels of government, etc.), it was essential that all participants agree to the research and analytic methodologies, the logic of the conclusions, and the underlying data. The goal was (and still is) to develop broad ownership of the resulting approach. To facilitate this process, *Moving South Africa* adopted a set of guiding principles to ensure that as many participants as possible understood the facts and supported the objectives. These principles required the strategy to be:

- *Focused*: the project could not examine every issue in transport, but had to focus on the key long-term strategic issues facing South Africa
- *Data Driven*: the analyses, conclusions, and strategy must be based on hard data, not opinion. This is one critical way in which *Moving South Africa* is distinguished from the White Paper. *Moving South Africa* expended significant effort to gather the data required to give the project a firm grounding, and additional effort to ensure that as many participants as possible agreed to the baseline data.

- *Consultative*: as described above, the project made every effort to be as inclusive and consultative as possible, to ensure a broad range of opinions in guiding the strategy formulation
- *Transparent*: to the extent possible, the project operated transparently, open to scrutiny from all members of the public. The exceptions occurred when some operators only provided critical data under the condition of confidentiality – but the final reports from each phase include confidential data from operators that has been approved for public release.
- *Capacity Building*: a subsidiary objective of the project was to build human capacity, both at the level of the Steering Committee and within the Department itself. The capacity building goal entailed creating the ability, in the Department and in the sector, to understand and continually refine and develop the strategy long after the consultants have left the project. For the NDOT, this involves a conscious decision to use the opportunity to develop a core strategic planning capacity.

5. ENVIRONMENT AND BACKGROUND

The Need for a Transport Strategy for South Africa

The Department of Transport embarked on the development of a twenty year strategy in response to a number of factors:

- Changes in the national political environment leading to new national objectives, as embodied in the Reconstruction and Development Programme (RDP), the Growth, Equity and Redistribution Strategy (GEAR), and the 1996 Transport White Paper, all underpinned by a new constitutional dispensation that alters the responsibilities of different levels of government;
- Changes in the prioritisation of the needs of the poor and dispossessed;
- Changes in the national economic environment, resulting from South Africa's reintegration into the world economy and other economic consequences of the new political dispensation;
- Changes in the transport sector and global transport trends that affect transport infrastructure and operations decisions in South Africa;
- A South African transport sector which was not working together sufficiently to improve mobility or economic competitiveness (to be detailed in Volume II of this report).

The environmental factor with the most wide-ranging impact, as referred to in the White Paper, was the advent of non-racial democracy in 1994. This sweeping change empowered millions of South Africans, and enshrined new rights and institutional structures in the new Constitution. The White Paper responded to this change, as described above, by stating a new vision for transport and creating new strategic objectives for policy. The White Paper, whilst very clearly setting out the policy measures for immediate financial and institutional reform in key areas of transport, nevertheless left many of the specifics about how to achieve the vision to a later strategy process.

The NDOT recognised at the time that a much more rigorous and data-driven analysis of the transport system and its customers was required in order to arrive at proposals and action plans for the fundamental restructuring of the system. The MSA project forms the bridge between policy and strategy, enabling policy makers to recognise and confront the hard choices needed translate the vision into reality.

The strategy must, therefore, accomplish three things: (a) test the White Paper's objectives against hard data to validate their feasibility, (b) reconcile and choose amongst any of those objectives that are conflicting, and (c) reconcile the objectives against the constraints of time and resource – especially money – scarcity. In addition, the strategy must take into account a third constraint, that of human capacity, which in the short run can limit the ability to deliver on the strategy.

Global and South African Economic Trends

As a result of changes in the political context that have opened South Africa to the world, economic reality for South Africa has evolved dramatically in the last five years. For the first time in decades, South Africa has been exposed to the forces of globalisation and, as a result, has become far more linked into patterns occurring in the larger global economy. This manifests itself in nearly every aspect of the economy, from currency valuation to transport technologies. Globalisation encompasses two particular phenomena, among others, that are especially relevant to South Africa's transport sector, given the role of transport as the key facilitator of international trade:

- Falling tariff barriers to international trade
- Diminishing non-tariff barriers to trade
- Reintegration into the global economy
- Changes in the South African economy

These factors create very new and challenging circumstances for the transport sector.

Falling Tariff Barriers

In the last 50 years, the industrialised world has experienced a clear trend in the reduction of tariff barriers globally. In recent years, this trend has accelerated with the formation of new multilateral trade agreements, including NAFTA, MERCOSUR, APEC, and, potentially, SADC. More recently still, the advent of the World Trade Organisation, resulting from the signature of the GATT agreements, has spread the falling tariff trend to less developed countries. **Figures 3** and **4** illustrate these trends over time:

Figure 3: Custom Tariffs for Industrialised Countries

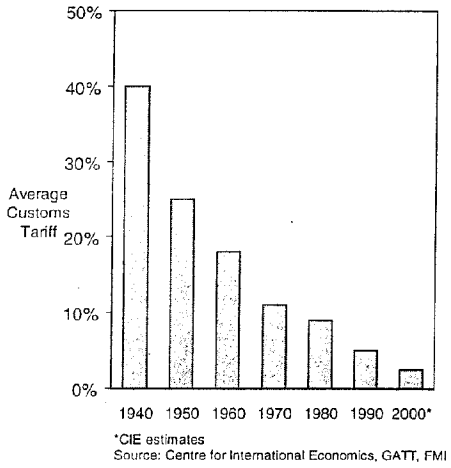
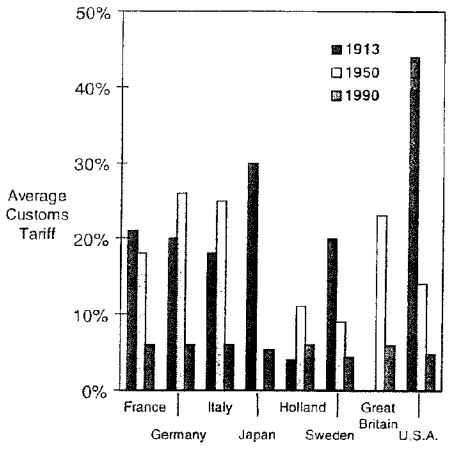


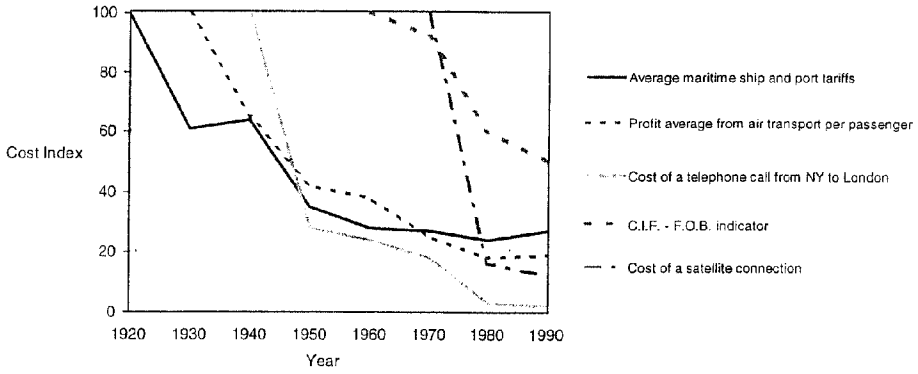
Figure 4: Average Custom Tariffs for Manufactured Products



Diminishing Non-Tariff Barriers to Trade

Transport and telecommunications are contributors to the cost of trade and communication, and these costs are also decreasing rapidly (see **Figure 5**).

Figure 5: Costs of Non-Tariff Trade Barriers



Note: C.I.G. index is based in the proportion of F.O.B. costs plus insurance and freight for disposable goods.
Source: Intelstat satellite tariffs; C.I.F., F.O.B. proportion from World Bank data; other data from Hufbauer 1991

This downward trend makes it easier for South Africa and other countries to interconnect with the world, and provides an impetus to increase trade. The falling costs in

telecommunications, for instance, also enable much greater mobility of capital for foreign investment and human resources to manage the connected businesses.

South African Reintegration into the Global Economy

As a result of the changing political context, South Africa has begun to reintegrate into the global economy. In the last five years, South Africa signed the GATT agreement and joined the World Trade Organisation (WTO). Concurrently, trade with all regions of the world has increased substantially since 1994, and this is especially true of trade with the SADC region. As **Figure 6** below suggests, not only has South African trade increased dramatically in recent years, but it will continue to grow substantially. *Moving South Africa*'s macroeconomic forecast projects that imports and exports will move largely into balance as 2020 approaches.

Figure 6: Import / Export Annual Growth Forecasts

	Europe	Asia
Exports	5.5%	5.6%
Imports	2.4%	3.3%
Expected date of balanced trade	2004	2007

Source: WEFA, MSA Analysis

All of these factors, combined with domestic production conditions, have created massive changes in South Africa's trade patterns and the nature of the goods being traded. In the last ten years, the volume of exported manufactured products has surged from 5% to 20% of exports, while gold and other primary products have fallen from 65% to 45% of exports in the same time period.[2] All of these patterns carry substantial implications for South Africa's transport systems.

Changes in the South African Economy

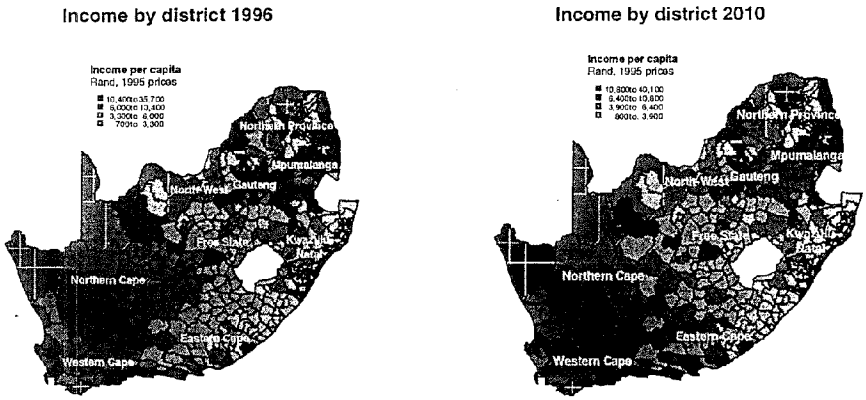
In addition to a massive reorientation of external trade patterns, the South African economy has been undergoing substantial internal changes, as well. The economic policy emphasis has shifted to creating jobs through a vibrant service economy, with a strong foundation and job growth provided by manufacturing-led exports. In addition, the new economic vision for the country places high emphasis on expected growth in tourism, another transport-intensive sector.

Other, more micro-level elements of the South African economy have also begun to evolve, with substantial ramifications for transport. For instance, the new government

[2] Source: DTI

has emphasised the expansion of economic opportunity to all citizens, beyond the privileged elite championed by the previous government. Consequently, as jobs grow and incomes rise across the board, there will be increasing demands for basic personal mobility, not just for commuting but for other activities, as well. **Figure 7** demonstrates the forecast growth in incomes, which will increase substantially the demand for transport services.

Figure 7: Forecast Growth in Incomes, 1996-2010



Social Goals Driving Transport Strategy

The new government is also investing heavily in the dramatic expansion of other basic services to previously underserved communities, including water, telecommunications, health care, housing, and electricity. To the extent that these expansions put in place new infrastructure that must be physically connected by transport, or make communities more sustainable, they increase demand for transport infrastructure and services.

Transport strategy developed under apartheid set out to connect dormitory townships with urban employment nodes, leaving non-commuters largely stranded. A new transport strategy is needed to provide all passengers with access to safe and reliable transport options, and to enable them to choose between different options, depending on their specific needs. Most significantly, a new transport strategy, in line with the vision set out in the White Paper, must prioritise those segments of the population either marginalised or excluded altogether in the past.

With the rate of approval of new housing developments gathering momentum as the National Department of Housing strives to meet its objectives for housing delivery, transport will be needed to link commuters with their work locations, the unemployed with employment opportunities, scholars with schools, shoppers with shopping districts and traders with customers and communities with each other. In short, the transport system must facilitate a new and higher level of social integration than before, breaking

down barriers of isolation amongst communities and making possible new opportunities for all people in the country.

Finally, as incomes rise and the demographic profile of passengers changes, the need for different types of transport options develops as well. While the provision of basic access to transport for the poor will remain a foundation of a new transport strategy, it must also be flexible enough to meet the needs of other passengers who require differentiated, higher value services from the transport system.

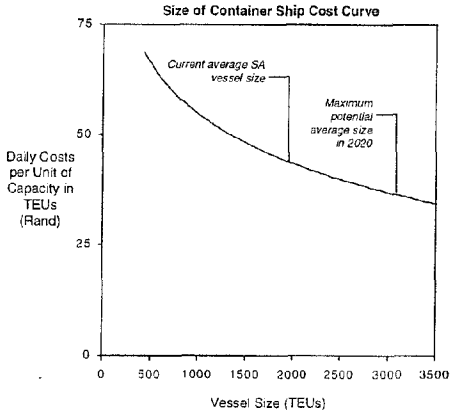
Transport-Specific Trends

In addition to changes in the economy at-large and in the social environment, current and future trends in the global transport industry itself will have a significant impact on South Africa's transport system, as the ability to affect them falls generally outside of the ambit of South African government or operators. The major trends include:

- *Liberalisation and Deregulation:* especially in aviation, increasing numbers of countries are permitting open skies agreements with unrestricted entry (beyond safety regulations) with little or no protection for national flag carriers. In some cases, the liberalisation is also being applied to rail and road operators. Related to this trend, in some countries, is a reduced reliance on government operating subsidies.

- *Intense Competition in Maritime Transport:* as global ship lines compete and search for greater economies of scale, they are integrating with other modal partners in key countries and moving towards bigger, "post-Panamax" ships that require bigger harbours and fewer ports of call. Intense competition in the industry is likely to lead to cost improvements by ship lines and lower prices to customers (see **Figure 8**).

Figure 8: Size of Ship Cost Curve



Note: Daily costs including operating costs and capital costs; average based on largest six ship lines serving South Africa
Source: Industry Interviews, MSA Analysis

- *Globalisation of Customers and Carriers:* international customers of transport are demanding high service levels, while operators are consolidating globally to meet the needs of global customers, through alliances, joint ventures, or outright acquisitions.

- *The Rise of Information Technology:* with increasingly sophisticated IT, global high-value-added manufacturers have increasingly been able to move towards just-in-time manufacturing processes, reducing inventory costs but increasing the demand for high-precision transport and logistics. Similarly, within transport, IT allows operators to offer more precise information to shippers and customers, raising the service levels.

- *Increasing Awareness of Safety and Environmental Consequences:* developed countries, in particular, are revising their transport strategies specifically to improve outcomes on these dimensions. Multilateral organisations like the UN have regularly convened conferences to address the environmental issues, which eventually could result in further global treaty restrictions on emissions. Rapidly rising dependence on automobiles is the single biggest contributor to this trend, and controls and efforts to improve outcomes, in many cases, are raising the overall transport costs to users.

- *Global Manufacturing Sourcing:* enabled by the advent of sophisticated IT and accompanying transport logistics, global manufacturers are increasingly sourcing their production from multiple sources around the world[3]. This,

[3] *Economist*, June 23 1998

along with the other global trends above, creates a cycle of further increased demand for high-precision, flexible, integrated transport services that deliver not only to domestic factories but to multiple foreign locations.

All of these trends, taken together with the new constitutional dispensation, the new economic strategy and goals, and new social direction, combine to make imperative the need for a new transport strategy for South Africa.

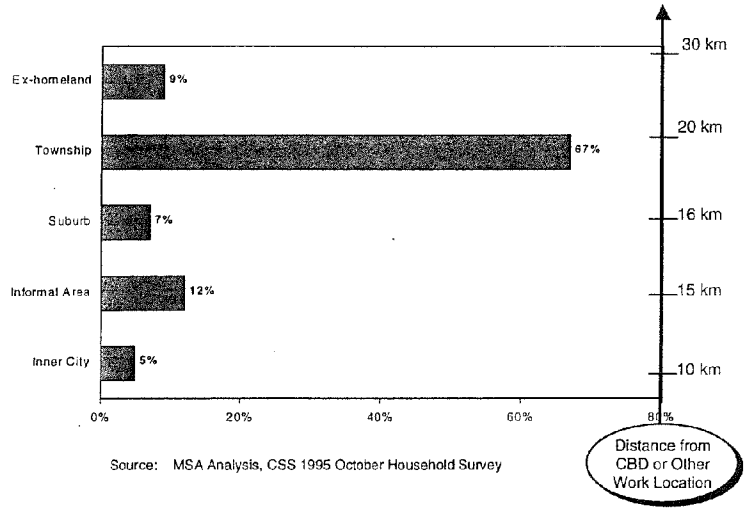
The Legacy Transport System in South Africa

Perhaps the most compelling reason for a new transport strategy is the fact that the current transport system no longer meets many of the needs of the country or its customers (see **Section 7** below). Moreover, the legacy of the apartheid era can be seen quite clearly in the transport system. In many instance, the current allocation of infrastructure and resources reflects a set of economic and social choices that have been superseded. The "facts on the ground" – the existing infrastructure, subsidies, range of services, etc. – are a direct outcome of decisions made by the apartheid government.

Transport decisions tend to be long-term in character, due to the heavy fixed costs involved, the spatial nature of location decisions, and the difficulty of moving property-based assets. As a result, a transport system that reflects the old strategy carries powerful momentum (to operate as it always has) into the future, even though it no longer reflects the new government's priorities, because of the difficulty and expense involved in altering it. This legacy manifests itself in a variety of specific ways in the transport context:

- *Urban Transport:* as **Figure 9** indicates, the legacy urban transport system is set up primarily to carry large volumes of inexpensive labour (i.e. black commuters) long distances from distant townships to employment centres in the service of 'separate development'.

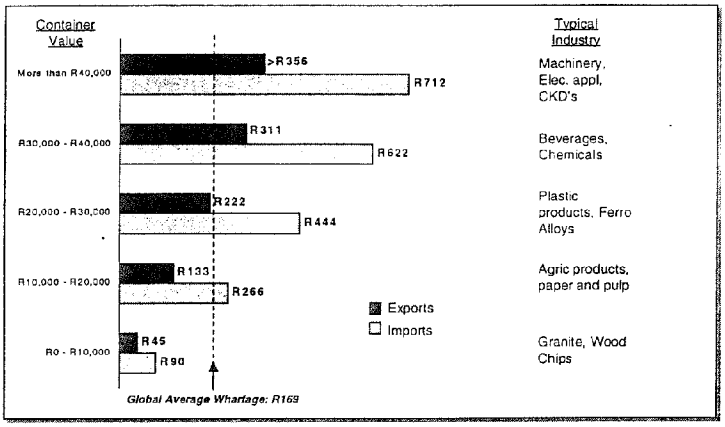
Figure 9: Distribution of Passengers by Settlement Type



Source: MSA Analysis, CSS 1995 October Household Survey

In addition, the legacy created separate bus systems (with separate subsidy mechanisms) for black and white commuters, and a complete lack of regulation over the mode – taxis – which carries over half of the urban commuter traffic.

Figure 10: Typical Port Wharfage Charges



Source: Portnet, Industry Interviews, International Benchmarking - Waterfront 1995.

- *Freight Transport:* the legacy freight system reflects a system designed to support an import substitution economy, as evidenced by the current import

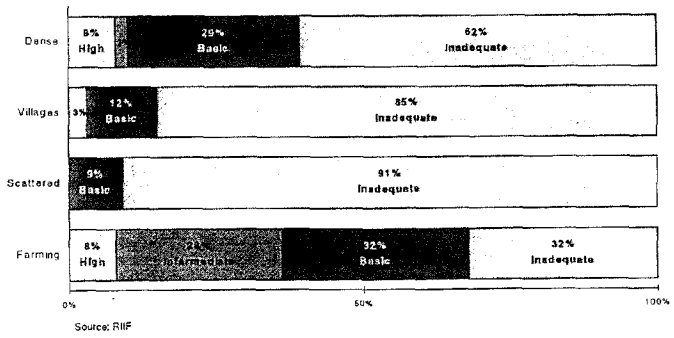
and export wharfage charges at South Africa's ports, shown in **Figure 10**. These charges, because they are levied ad valorem rather than on a cost basis, reinforced the effect of high tariff barriers to discourage imports in general, and higher value imports in particular, in order to reduce the country's requirement for foreign currency and promote import substitution.

The freight system was, however, highly successful in creating tailored systems to encourage the export of bulk commodities like coal and iron ore, in order to generate foreign exchange. The old government also used the transport parastatals, especially Spoornet, as a way of creating employment for the Afrikaner working class. The legacy is thus one focused not so much on transport efficiency but on accomplishing social goals.

- *Other Areas:* the transport legacy is evident in other areas, as well. Cheap roads and inexpensive cars enabled many white South Africans to bypass the need to use public transport. The long-distance road network was built to support internal travel for one small segment of the population.

  In contrast, the existing road network only sporadically serves the former homelands (except to move commuters into employment areas in distant cities), and the road network in rural areas is set up to provide access for white commercial farmers, while bypassing most other rural communities. As **Figure 11** indicates, commercial agricultural rural communities are the only ones with a significant number of roads connecting to the main road network.

Figure 11: Distribution of Rural Roads by Quality and Community Type



Taken as a whole, the previous government created a transport system that served national goals that were designed to accomplish goals of employment creation for a privileged class of citizens, and engineered to support a spatial dispensation with no rational economic or social basis. This is the system that perpetuates itself into the post-

apartheid era, and the system that the NDOT has begun to address, starting with the White Paper process.

Confronting this legacy creates an action agenda that *Moving South Africa* refers to as the "unwind agenda" – that is, the systematic re-creation of the system from the ground up, starting with the new national objectives. This agenda requires a process of "creative destruction": the strategy must consider how to create new institutions, new rules, and new alignment between the new national objectives and the transport system. Also, those institutions and imperatives which do *not* serve the new dispensation must be reconfigured or dismantled. The unwind agenda is imperative – unless this step is taken, the transport system cannot build the basic platform upon which to innovate and improve. This "creative destruction" is, therefore, the first step of the process, and one which will be enumerated in more detail in Volume II below.

More Recent Trends in South African Transport and The White Paper

The White Paper process, which concluded in 1996, took the first steps towards the unwind agenda. Most importantly, it reoriented transport priorities to be consistent with the RDP and GEAR. In addition, it articulated new principles and objectives for transport – for instance, that no passenger should pay more than 10% of household income for transport. The NDOT began a dramatic reconfiguration of its own organisational structure, paring down in size from 1400 to 250 employees, and institutionally restructuring several functions into fully or partially self-funding agencies, including maritime and aviation safety, national roads, and cross-border land transport regulation.

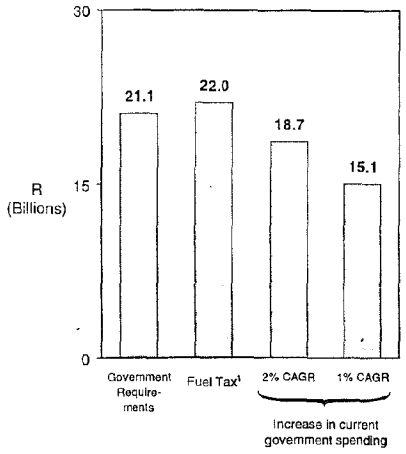
The resulting new NDOT will focus on policy, strategy and regulation, rather than administration. Another substantial result emerging from the White Paper process is the National Land Transport Bill, which will shortly be tabled in Parliament. This legislation will have a far-reaching impact on the institutional structure for urban transport planning, among other things, creating transit authorities at local and metropolitan level with substantial jurisdiction over transport issues.

In addition, the transport sector has seen other developments since 1994. Several state assets have been fully or partially privatised, including Sun Air and the Airports Company of South Africa. New developments have been considered or are in development, for example, the new port at Coega and the Maputo Development Corridor. All of these actions have contributed to moving the transport system forward and accomplishing the vision of the White Paper, but have not always occurred in the context of an integrated national transport strategy. The White Paper recognised this problem, and left room for a strategy process such as *Moving South Africa* to bring strategic coherence to future actions in the transport sector.

A further trend in this decade is the diminishing national financial support for transport expenditures. As claims on the fiscus to meet ambitious RDP goals have grown, the amount of national funding for transport subsidies and infrastructure construction and

maintenance has dropped. **Figure 12** indicates funding requirements in 2020 if the trend continues.

Figure 12: Government Transport Funding Scenarios, 2020



¹Approximately equal to 3% CAGR of current government spending
Note: All externalities are **excluded**

Thus, there has been increasing pressure on the transport system to do more with less funding, regardless of the strategy or the new objectives emerging from GEAR and the RDP.

Scarce Resources

The scarcity of funds for transport, as described above, is one of the principal reasons for designing a national transport strategy. South Africa has limited resources, financial and otherwise, and, since 1994, an increasing need to distribute those resources far more equitably than in the past, not just within transport but across the entire portfolio of national spending. In addition, time is limited, especially in the context of transport investments, which tend to be long-term and capital-intensive. And finally, there is a potentially endless scope for action: the range of possible transport projects or priorities upon which to focus is immense. For instance, should the nation invest in building new ports or in upgrading old ones? Should the nation maintain its current rail lines or invest more heavily in road infrastructure?

Given these limitations of time and resources, therefore, only a genuinely strategic national view can reconcile all of the needs and constraints, and provide decision rules for how to make the trade-offs and choices required in a world of resource scarcity

6. THE ECONOMIC AND SOCIAL ROLE OF TRANSPORT

The Role of Transport

Classic macroeconomic theory suggests that productive infrastructure, including transport assets, is one of several key preconditions for national economic growth[4]. The theory holds that by investing in assets like bridges, roads, ports, or even telephone lines, a nation can structure development by reducing transport and communications costs, thereby facilitating further trade and creation of wealth. Indeed, transport is generally seen as an engine of growth and a guarantor of national integration, both internally and with the external global economy.

As those who are providers of transport services or owners of transport infrastructure are well aware, transport is also an industry in and of itself. It is an industry that employs many people globally and in South Africa, accounts for a substantial number of jobs in the national economy, and has supplier industries and customers of its own.

However, for the purposes of the White Paper and the strategy, the NDOT has adopted the view that transport is best seen as an *enabling* industry, one which exists not only to meet goals inherent to transport, but also to meet other pressing national and social objectives. Examples of such non-transport objectives include (but are not limited to):

- Economic growth, creating a high and rising standard of living for all citizens as set out in GEAR and the RDP,
- Increased trade, especially with neighbouring SADC countries,
- Improved access to employment opportunities, or
- Increased social integration.

Transport, therefore, becomes a critical input for other industries and other social objectives set outside of the transport context.

The Role of NDOT

Extending this logic to the governmental setting, *Moving South Africa* similarly considered Transport as a *provider* department to other departments. This theme is repeated throughout the strategy, and represents the first important choice made by the strategy. For if transport is to provide solutions to meet the objectives set forth by other national government departments, then the way in which NDOT and its 'clients' articulate and communicate these goals must undergo a fundamental revision. Another implication of adopting the 'provider department' point of view is that transport must deliver on the objectives of other departments to ensure that any resources allocated meet the goals of the client ministries cost-effectively.

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[4] *Moving America*, U.S. Department of Transportation, 1990.

National Determinants of Competitive Advantage

The principal economic goal of a nation, like South Africa, is to provide a high and rising standard of living for its citizens. This goal depends on the nation's ability to achieve high and rising levels of capital, labour and management productivity in the activities it performs. Sustained productivity growth requires that the economy continually upgrade itself, by improving productivity in existing activities, moving into higher productivity segments of the industries in which it currently competes, and entering entirely new industries that offer the prospects for high productivity.

Industries, including parts of the transport industry, which compete internationally have particular leverage for productivity growth. The most productive industries can expand via exports, and absorb resources from less productive industries whose products can be imported. This highlights, however, why the ability to export *per se* is not what is most valuable. Exports based on low wages and low profits do not boost a nation's standard of living; only those reflecting high productivity do. The traded sector, because it faces international competition, is also of crucial importance because it will be the place where weaknesses in an economy first become apparent.

Ultimately, it is firms – not nations or regions – that compete. A nation, however, provides the platform from which firms compete. Thus, from the perspective of competitiveness, a region or country is best viewed as a platform for a firm's global strategy, providing a home base that both supports and provides incentives for innovation and upgrading.

Countries can therefore create the conditions under which their firms provide world class competitive services, but it requires a concerted effort to put into place a number of components in the national platform. An example of a successful South African effort to reach world class service is the Spoornet CoalLink line to Richards Bay. The system produces the lowest cost inland coal transport in the world at a high level of efficiency, and thereby creates a dedicated source of advantage for South African coal exporters. The system succeeds because various elements of the production chain: customers, Spoornet, and the national government created the right conditions – for example, in the form of financing availability – for the project.

CoalLink as a Tailored System

During the 1960s and early 1970s, the little coal that was exported from South Africa, went through Maputo. Although feasibility studies showed that a dedicated coal export harbour at Richards Bay would not be a viable option, the Government nevertheless decided to proceed with the project. The planning of this export system was totally integrated, with producers investing in rapid-loading facilities able to fill a unit train within a few hours. Dedicated wagons contributed to the short turn-around time of slightly over two days. The line itself was designed to accommodate unit trains of fifty and later one hundred wagons. The terminal facilities at the port - owned by the coal

exporters, and not the government - were also specifically designed to integrate with the rest of the system.

The initial planned volume of slightly more than two million tons was not nearly enough to make this project viable. However, the huge increase in volumes since the inception of the project has ensured that South Africa can deliver coal onto world markets at world class cost levels.

Having identified the platform as the critical leverage area for growth, the question then becomes : what is it about a nation or a region that supports high productivity and rapid upgrading in individual industries? What is it about a nation or a region that provides a dynamic environment for its firms?

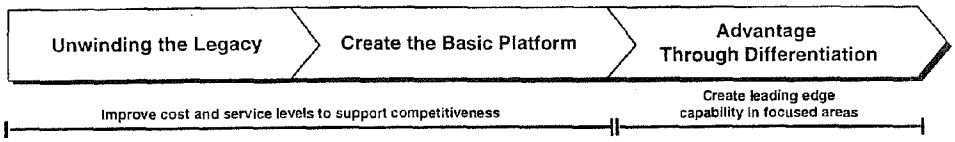
In the context of the transport sector, the platform comprises the structure of the industry as well as the nature of the relationships between providers and customers and the ability of the latter to influence decisions and outcomes. In addition, it covers factor conditions – primarily the extent and sophistication of the transport infrastructure itself, but also the question of human capacity and the level of skills available to maintain and upgrade the system over time. Finally, the platform also encompasses the institutional and regulatory environment which both bounds the scope of action for individual planners and providers, and creates an environment for differentiation and upgrading at both system and firm level.

In South Africa, apartheid policies played an especially invasive role in the transport sector, and created a system where the traditional elements of the platform could not signal each other to create the appropriate responses. The current transport system, as will be described in **Section 7** below, is characterised by blockages and poor signaling – for example, many pricing mechanisms do not signal true value, or many customers have little or no buying power.

As such, even as the strategy gears up to start strengthening the platform, there is a critical first set of actions which MSA refers to as the *unwind agenda*, to describe the 'creative destruction' of elements of the legacy system that inhibit clear signaling within the platform. This will require decisions about the scope of the transport system, as well as about orienting the institutions and linkages to receive and send clear and rational signals. This becomes the most immediate short-run task of the strategy, and will have the most relevance in the area of passenger transport.

In the longer run, the objective will be to create a transport industry platform from which firms can compete, innovate, and differentiate with the appropriate level of support and regulation from the government. This constitutes the *build the platform* and *differentiate* agenda (see **Figure 13**), for it is only when the system begins to provide differentiated services, like the CoalLink line, that it will provide South African firms with a competitive advantage, regionally or globally.

Figure 13: Building the Transport Platform



VOLUME II: SITUATIONAL ANALYSIS AND THE STRATEGY

Before describing the *Moving South Africa* strategy, this section enumerates the methodology and underlying logic which the team used to develop the transport strategy. Based on the principle of being a customer-focused strategy, the process begins with the customers' objectives. MSA looked at the objectives – both current and for 2020 – of two types of customers: end users of the transport system who pay for some or all of their transport needs, and the *nation* as a customer, in terms of its need for the system to meet certain key national objectives for mobility, economic competitiveness, or coverage.

The team evaluated the performance of the transport system against these objectives, and, where relevant, identified the critical gaps. In addition to locating current performance gaps, the team employed tested macroeconomic scenarios and macroeconomic forecasts to generate predictions of gaps in the future, out to the year 2020. Thereafter, the focus shifted to the causes, or 'drivers' of those gaps, which were later articulated as 'key strategic challenges', which the Steering Committee and participants in the government consultation process then prioritised for solutions.

7. RESULTS OF THE SITUATIONAL ANALYSIS: FROM CUSTOMER OBJECTIVES TO THE KEY STRATEGIC CHALLENGES

Key Strategic Challenges: General

In Phase 2 of the project, and in keeping with the principle of customer focus, MSA organised its work primarily around customers and markets. Workgroups examined gaps and challenges pertaining to freight customers, urban passengers, rural passengers, and tourist/long-distance passengers. Additional groups analysed cross-cutting issues across all customer groups pertaining to financial sustainability, safety and the environment, institutional and regulatory structures, and human capacity building.

What emerged from this analysis, based on the system's current and forecast future performance against customer and national objectives, was the identification of 32 key strategic challenges for the transport system to address. The project defines a key strategic challenge as a problem or opportunity that the strategy must address because of its importance or potential impact on the system's ability to meet customer needs. The key strategic challenges clustered into two categories:

- Those that are outside the transport system, or require prior choices to be made by others outside the transport sector in order to reach a resolution; and

- Those within the transport system, and are more within the direct control of NDOT, other governmental transport entities, or other transport providers or stakeholders.

In all, the team identified 10 upstream key strategic challenges and 22 transport-specific key strategic challenges (see **Figure 14**).

Figure 14: The 32 Key Strategic Challenges Facing the Transport Sector

	Key Strategic Challenges	
	Upstream Choice / Coordination Challenge	**Transport Strategic Challenge**
Tourism / Long Distance	1. Co-ordination with macro-tourism strategy	11. Aviation policy and capacity management 12. Coach industry sustainability 13. Cost structure of SAA 14. Service quality upgrade
Rural	2. Co-ordinated rural infrastructure strategy	15. Long term road investment sustainability
Urban	3. Integrated spatial planning	16. Affordable basic access for stranded 17. Attractive public transport system 18. High system cost public transport system 19. Manage 2020 car usage 20. Transport planning and regulation
Freight	4. Alignment with industrial strategy 5. Ingegrated spatial planning — industrial location 6. Coordination with SADC	21. Poor cost and service in ports, rail 22. Global shipping backhaul 23. SADC transit times and cost premia 24. Maintain and develop advanced factors
Safety and Environment	7. Balance of user cost with externality minimisation 8. Balance of job creation with externality minimisation	25. Improve risk alignment 26. Fragmentation of enforcement and regulation
Sustainability	9. Balance between sustainability and user cost and service	27. Adequate public funding for roads and public transport 28. Stabilise destructive competition in private sector industries (truck, taxi) 29. Address the industry structure issues created by large-scale state ownership 30. Improve feedback mechanisms
Capacity	10. Alignment of the institutional supply chain for capacity (align both institutions and strategy)	31. Address basic skills gap 32. Create capacity for new roles in government and private sector

At the end of Phase 3, *Moving South Africa* conducted detailed consultations with senior members of government and the parastatals, who prioritised and distilled some of the key strategic challenges to help focus the research agenda and the strategy. That decision was ratified in a later meeting of the Steering Committee, and those distilled and prioritised key strategic challenges are discussed in the body of this report, in the context of the relevant customer group or cross-cutting issue.

A Note on Methodology

Moving South Africa approached the situational analysis with a mission of identifying the principal gaps against customer and national objectives, both now and in the next twenty years. Thus, the description of these findings will appear to be focused on negative aspects of South Africa's transport system. While the facts and gaps speak for themselves, as they are based on empirically tested (and testable) data, the situation analysis also uncovered situations where the system performs well. These areas, naturally, receive less coverage in this report, since the system is already aligned and meeting customer needs, and the strategy effort is designed to create a system that delivers against unmet needs. Examples of areas, overall, where the system performs reasonably well include the bulk coal line to Richards Bay and the port there, the bulk iron ore line to Saldana and the port there, the road network for urban passengers, road freight user costs, container export costs, the long-distance road network for long-distance and tourist passengers, coach industry service, domestic aviation service, airport infrastructure upgrading, and the rural road network serving commercial farm areas. Thus, although the remainder of the description of Phase 2 will focus on negative aspects of the system, the NDOT recognises that significant elements of the system are currently delivering acceptable levels of customer satisfaction. These will be detailed briefly within each of the customer sections below.

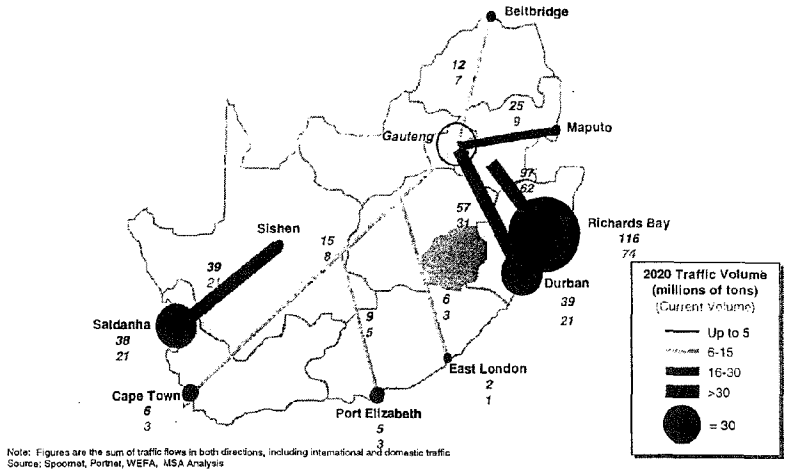
7.1 Findings: Freight Customers

Freight Customers: Current Situation and System Performance

Customer demand[5] for freight transport in South Africa is currently highly concentrated on two bulk export flows, one general cargo export flow between Johannesburg and Durban, and a series of other midsized corridors. Future flows are expected to adhere to a similar pattern but at significantly higher volumes, as shown in **Figure 15**.

[5] Several aspects of the freight system, including liquid bulk imports and air freight, were not considered in depth due to low volumes or lower prioritisation from the Steering Committee.

Figure 15: Current and Future Freight Volumes



The majority of freight customers are geographically concentrated, requiring transport from dense industrial locations to destinations. These are fed by relatively dense 'corridors'. The main nodes in this system are Johannesburg, Durban, and Cape Town. The remainder of the customers cluster into two main groups: those who locate in smaller nodes (e.g. Port Elizabeth, Nelspruit), or those who are spread throughout the country in small concentrations (e.g. commercial farmers). Thus, while South African freight can benefit from some of the economics of density, the country has a large hurdle to overcome, inasmuch as it is distant from foreign markets and its principal domestic markets are all relatively distant from each other, unlike, for example, the Netherlands or Brazil. Nonetheless, MSA found significant evidence that the freight system was already beginning to consolidate around several high volume corridors.

Interviews with freight customers revealed a significant level of dissatisfaction with key aspects of the freight system. While customers expressed satisfaction in general with road freight prices and levels of service, they were significantly less satisfied with rail general freight prices and service, and were highly dissatisfied with current levels of service, especially delays, at the ports. For the inland leg, including ports, 60% of customers felt that transit times were too high, and these customers wanted to see a 37% reduction in the overall inland transit times. Outside the ports, 73% of customers also expressed a strong preference for improved transit times on the maritime leg of the shipment. The elements of the freight system that drew the highest level of customer satisfaction were the dedicated bulk export lines for coal and iron ore. Customers there were highly satisfied with the level of

service, operated the ports as a consortium, and – on the coal line – have agreed a contract with Spoornet that guarantees falling prices for rail transport.

One contradictory finding was that even though customers generally expressed satisfaction with road freight prices and service, South African road freight hauliers performed worse than expected on service, and no better on cost when compared to international benchmarks. **Figure 16** below compares services offered by South African road freight hauliers with those offered by U.S. counterparts.

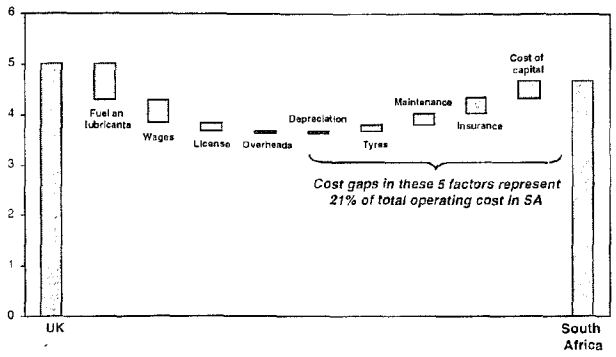
Figure 16: Road Freight Service Comparison

	Selected Leading SA Road Hauliers Offering Service			
	A	B	C	D
Time critical service with 100% on-time guarantee	No	No	No	No
24 hour tracking and monitoring	Yes	No	Yes	Yes
Order management	Yes	No	No	No
IT services: EDI for ordering	No	No	No	No
Dial-in for customer info	Yes	No	No	No
Web-site	Yes	No	Yes	No

* Schneider, Roadway, ABF taken as examples of best practice
Source: Web-sites, leading SA haulier customer service departments

Figure 17 below indicates the relative cost position of a South African road freight haulier vs. that of a UK counterpart. South African cost advantages in fuel, wages and other factors are dissipated by higher costs in areas like maintenance, insurance, and financing.

Figure 17: Cost components explaining the difference in vehicle operating cost between South Africa and the UK



Note: (1) Comparison standardises fro all utilisation factors. Assumptions :110,000 kms per year, fuel consumption 38litres per 100 km, depreciation times and residual values standardised to assumptions in RFA cost schedule
Source: RFA cost schedule 1997 (5 axle average cost), Commercial Motor UK 1997 (5 axle)

As such, the customers articulated overall goals for higher reliability on almost all modes, and better pricing for rail and ports. When asked to rank order factors by importance, customers rated "Reliability and Transit Time" highest (86.8 of 100), followed closely by "Rates" (80.6 of 100).

Serving Freight Customers: Key Strategic Challenges

Working from the performance gaps identified by freight customers, *Moving South Africa* identified seven key strategic challenges with direct relevance to freight transport. These were consolidated into two specific areas of concern: lack of support for export competitiveness, and low levels of system sustainability. These were selected as the principal challenges because of their significant impact on the ability to achieve pressing national and customer goals.

Export Competitiveness:	Lack of alignment for value-added exports
	Barriers to cross-border SADC traffic
System Sustainability:	High systems cost of domestic freight
	Sustainability of freight industry

Export Competitiveness

Key Strategic Challenge: Lack of Alignment for Value-Added Exports

As stated above, the freight transport system was engineered to support a two-pronged industrial strategy: an import-substitution economy to ensure self-sufficiency in a world of sanctions and uncertain international acceptance, and

development of specific commodity export capabilities in order to generate sufficient foreign exchange required to keep the government operating.

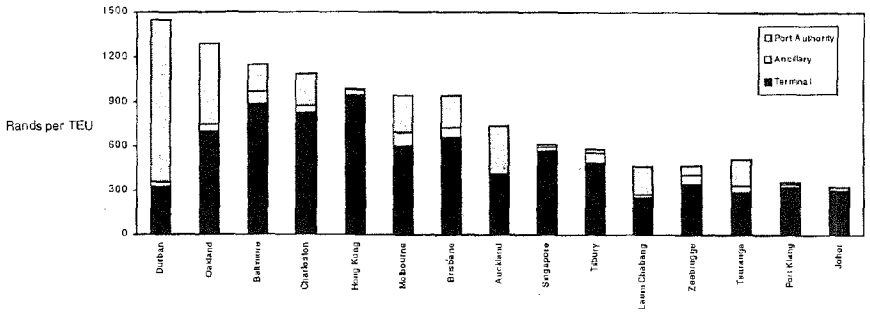
As a result, the freight transport system works exceptionally well – in fact, at world class standards – in select areas, including the export of coal and iron ore. As noted above, this was reflected in generally high levels of end-customer satisfaction for these services. Spoornet built dedicated rail lines to serve these needs, and specialised ports to handle the ocean freight evolved to complete the export chain. However, as described in the context section of Volume I, when the new democratic government took office, the industrial and manufacturing priorities changed. The country has adopted a strategy that emphasises the export of value-added export manufactured goods.[6] In addition, the new industrial strategy places heavy importance on trade of manufactured and other goods with neighbouring SADC countries. Consequently, South African value-added exports to the rest of the world have increased dramatically since 1994.

Notwithstanding these shifts, the transport system still does not reflect this strategy. This can be seen in three areas: rail general freight service, port costs, and ocean freight rates. In the realm of rail, general freight performed poorly on service reliability and operating cost, measured against international benchmarks, other Spoornet rail operations, and internal Spoornet reliability targets. General freight (less-than-train-load) achieved 62% reliability, compared to 98% for bulk freight and 82% for general freight train-load freight. As rail constitutes one critical leg of the intermodal export chain, this creates a barrier to success in achieving the new industrial strategy.

The area in which the legacy transport system's effect can be seen most clearly is in port charges, the majority of which, as described in **Figure 18** below, result from *ad valorem* fees, rather than a cost plus basis. In addition, another continuing legacy of the import substitution regime is the differential in the value of import charges versus that of export charges: import charges are higher at the ports than identical exports.

[6] Interviews with DTI, February 1998

Figure 18: Total Waterfront Charges



Note: Breakdown of waterfront charges may vary due to different financial structures which affect pricing

The average port delay in 1997 was almost 20 hours, and over 61% of vessels calling at South African ports were delayed for some period of time.

Finally, the lack of alignment is also evidenced in the maritime leg of the export chain. The graphic in **Figure 19** below shows the percent of time that the average South African value-added export container spends in each step of the transport chain. The time is heavily weighted – 83% of time traveling – to the ocean-going portion, due to South Africa's distance from most of its major markets in Europe or Asia. This distance constitutes a significant factor disadvantage for South Africa as it competes in the global economy.

Figure 19: Transit Time in the Import/Export Chain

Exports

	Cross Haulage and Cartage	Inland Terminal	Rail Trunk Leg	Port	Ocean Transport
Average Distance	20km	500m	720km	500m	11,200km
Time	0.13 Days	2 Days	1.75 Days	2 Days	25-31 Days

Imports

	Cross Haulage and Cartage	Inland Terminal	Rail Trunk Leg	Port	Ocean Transport
Average Distance	20km	500m	720km	500m	11,200km
Time	0.13 Days	3 Days	1.75 Days	3.9 Days	21-23 Days

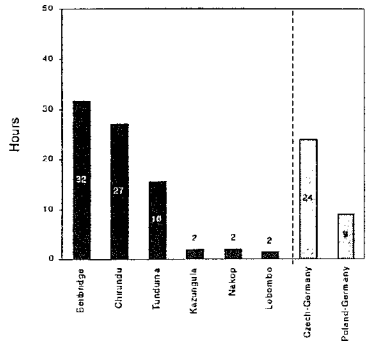
Note: Based on case studies
Source: Industry interviews, Portnet, Spoornet, MSA Analysis

Given South Africa's distance from its major markets in Asia and Europe, ocean freight costs account for 68% of the cost of transport for containerised imports and 60% of transport cost for containerised exports. South Africa currently enjoys a cost advantage in the international maritime portion of shipping, due to the present imbalance of trade with other countries. A container export to Singapore, for example, currently enjoys a cost advantage of US$9 per 100 nautical miles over a container import from Singapore. Similarly, because of the trade patterns, South Africa has a more favorable cost to export than other competing countries, like Argentina. As the balance of trade evens over time (as described in Volume I, above), however, the extent of discounted backhauling will decrease. As a result, the maritime cost advantage will deteriorate and the most expensive piece of the shipping chain will increase in price.

Key Strategic Challenge: Barriers to Cross-Border SADC Traffic

Given the importance of regional trade as a driver of economic growth, trade integration with SADC has become of the key priorities of the Department of Trade and Industry, and transport is critical to accomplishing that objective. And yet SADC trade, despite South Africa's recent normalisation of relations with neighbours, is still characterised by lack of conformity, high degrees of complexity, and exceptional levels of delay. The MSA study found that on average, trucks wait at the Beitbridge border with Zimbabwe up to 32 hours, which is longer than some of Europe's most notorious border crossings, like the Czech-German border (see **Figure 20**). The amount of paperwork involved in cross-border shipping to SADC also serves as a substantial deterrent to low cost and timely trade, as is described in **Figure 21** below.

Figure 20: Average SADC Border Delays



Operating hours at Beitbridge are 8am to 4pm with an hour break at midday

Figure 21: Customs and Excise Documentation Required for Cross Border Transport for Goods Exported From S.A. to Other SADC Countries

	SA (Export)		SACU (Import)		Zimbabwe (Import)		Zambia (Import)	
	Original	No. Copies	Original	No. Copies	Original	No. Copies	Original	No. Copies
Customs Union Permit			For Statistics		n.a.		n.a.	
Road Manifest		4		2		4		✓
Fit 76	✓	2						
DA550 or DA59	✓	2						
Commercial Invoice	✓	2	✓	1	✓	2	✓	
CCA1 (unbroad)			✓	2				
Deferred Tax Form (taxable)			✓	3				
All Original Invoices					1 for each consignment			
Certificate of Origin					✓	2		
RSA Customs Stamped Docs					✓		✓	
Zambian Certified Invoice							✓	
EP (Goods >$500)							✓	
SOS (Goods >$300)							✓	

Source : DoT Cross-Border Infodesk

As a consequence, an identical load traveling to a SADC destination carries cost premium per kilometer ranging from 46% to 119% over domestic South African costs, depending on the destination.[7] This cost premium translates into R325 million annually for road freight alone. This figure is especially sensitive because South African goods already begin with a relative cost disadvantage versus locally produced goods in other SADC countries like Zambia or Malawi. The factors that drive this premium are border post delays, lack of backhaul opportunities, non-standard gross vehicle mass and dimensions, and miscellaneous permits and road user charges.

System Sustainability

High Non-User Costs of Domestic Freight

In general, the South African freight system is characterised by a high systems cost and low levels of long-term sustainability. Thus, even while customers are satisfied with price and service levels of road freight, for example, the system is imposing other costs on the society in the form of externalities (e.g. safety and environmental damage) and road building and maintenance. In addition, rail general freight operates at a high cost compared with international benchmarks, and level of service lower than is desired by customers. Overall, therefore, the system costs more than it needs to; high

[7] Price premiums to: Harare 51%, Lusaka 46%, Maputo 103%, Dar es Salaam 119%

system costs combined with significant resource constraints, create a dynamic of a gradually deteriorating and, eventually, financially unsustainable system.

Road freight, in particular, creates several unsustainable externality costs such as pollution. Currently, these costs are not passed on to the users through any clear financial mechanism. As a result, these costs are pushed out of the transport system and into the rest of society, thereby distorting the true economics of road freight with consequent effects on modal shares and the balance of modal competition.

The most significant evidence of high non-user costs appears in the area of roads infrastructure. Roads are funded by the fiscus, the provinces and local authorities, at a level of R8.6 billion per year for declared roads (see **Figures 22** and **23**). While road users pay into the fiscus through the fuel tax, that is not dedicated to the roads, nor is it tied specifically to the use of the roads. Even the National Roads Agency is funded through an allocation from the fiscus and not a dedicated fuel levy. In other words, there is no direct pricing of road usage. Provincial roads are funded from license fees and general revenues allocated from the fiscus. As such, many non-users of the road system are paying for road construction and maintenance, while many users do not bear the full cost of their use of the roads. Similarly, the Road Accident Fund receives its funding from a general fuel tax, rather than being tied to driver's individual risk levels. Consequently, many people with no responsibility for accidents pay for an insurance fund that benefits accident victims. Also, overloading occurs frequently, creating additional maintenance costs for the roads.

Figure 22: Road Network Backlog, 1997

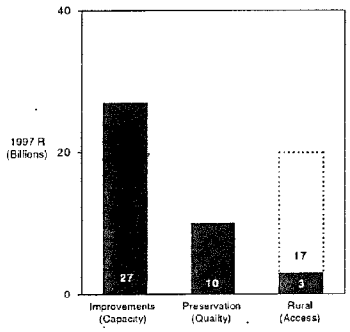
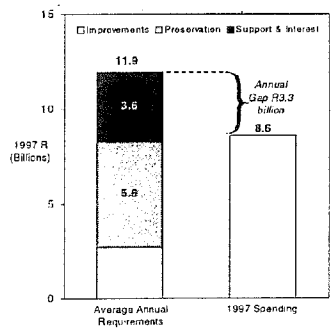


Figure 23: Annual Gap Between Current and Steady State Spending[1]



Note: [1] Spending required to maintain current level of service. Includes national, provincial, local and toll roads road improvements, preservation and support services
Source: Financial Planning and Co-ordination of Rural Roads 1996; GIBB Africa analysis, MSA analysis

The rail freight system also imposes costs on the system that are not borne directly by its users. Whilst the rail general freight system as a whole does

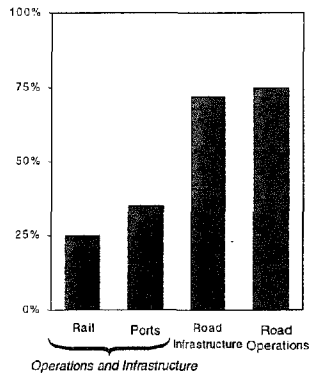
generate some positive cash flow, it can only do so through very low levels of reinvestment. This underinvestment combined with a shareholder that does not demand a return on capital means that rail general freight customers do not pay the full cost for the service they receive. These non-user costs distort the modal balance and threaten the long-term sustainability of the rail system.

The result of all of these non-user costs in the system is twofold. First, the system loses the ability to pay for itself fully. This creates increasing pressure on other sources, most notably the national fiscus, to fund these hidden costs. Such hidden costs can emerge in the form of environmental remediation, health care for accident victims, foregone return on capital, and road construction and maintenance. To the extent that the fiscus is constrained, which it is, this raises concerns in the long run about the system's financial sustainability. Second, these hidden costs create blockages in the signaling mechanisms, such that pricing no longer signals the purchase of true value. Rather, pricing reflects only a piece of the cost, thereby distorting the appropriate use of different modes and contributing to the lack of sustainability in the system.

Overall Sustainability of the Freight Industry

The finding of most concern for a twenty year strategy was that the freight system is suffering from a deterioration in overall system quality. This is evidenced most directly in the degree of capital reinvestment in the major elements of the freight system. As **Figure 24** below indicates, current capital spending as a percentage of long-term capital requirements in rail, ports, and road freight operations and infrastructure falls well below required levels. Throughout the entire South African transport system, only airports and foreign air carriers are reinvesting at sufficient levels to handle replacement and upgrading of their assets.

Figure 24: Current Capital Spending as a Percentage of Long Term Capital Requirements

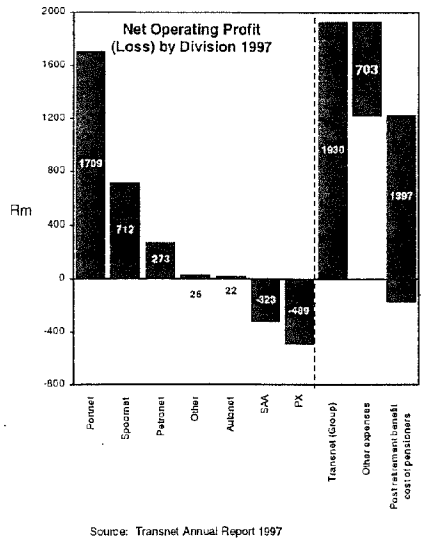


[1] Long term requirements covers full replacement of assets currently in use
Source: Transnet Annual Report 1997, RFA, MSA Financial Model, DoT, LTPS, MSA Estimates and Analysis

The implications of the current system deterioration – if unchecked – are substantial: as the South African manufacturing economy becomes more sophisticated. With the adoption of increasingly advanced logistics, non-price dimensions of the system will become more important. Thus, just as South African customers begin to require higher quality, higher precision transport services, the decreasing quality of the network and its assets will make it more and more difficult to provide those services in a reliable fashion.

A second contributor to the lack of overall system sustainability is related to the transparent pricing problem described above. Currently, Transnet owns a series of relatively unrelated transport businesses. As **Figure 25** illustrates, some units, like Portnet, earn significant profits, and some, like PX, operate below profitability. Historically, Transnet has cross-funded among its different businesses. While this has proven helpful in keeping the enterprise as a whole solvent, it presents signaling and sustainability problems for transport customers.

Figure 25: Transnet: Group Financials



Source: Transnet Annual Report 1997

The sustainability issues emerge as even Transnet business units that generate sufficient cash flow, for example Portnet, are not able reinvest at sustainable levels due to the demands for capital from the other business units. The signaling issue arises because the cross-funding that is currently sustaining the system masks the true costs, and is therefore not sending proper pricing signals of the value of the services sold. Thus, the cross-funding conceals important reinvestment and signaling problems, with short-term implications for pricing and long-term implications for service quality and reliability. Internal Transnet transformation processes are seeking to address some of the sustainable issues.

7.2 Findings: Passenger Customers

Moving South Africa examined several different groups of customers to identify their needs and goals for the transport system. The first major MSA consultation with government prioritised urban passengers as the area for most in-depth analysis, as well as where the vast majority of passengers reside. In addition, the situational analysis examined the needs of tourist and long-distance passengers, rural passengers, and special needs passengers.

7.2.1 Findings: Urban Customers

Urban Passengers: Current Situation and System Performance

Based on original survey research, combined with established databases (AMPS and the October Household Survey), *Moving South Africa* divided urban passengers into six customer segments, each with different needs from the urban transport system (see **Figure 26**).

Figure 26: Urban Passenger Segmentation

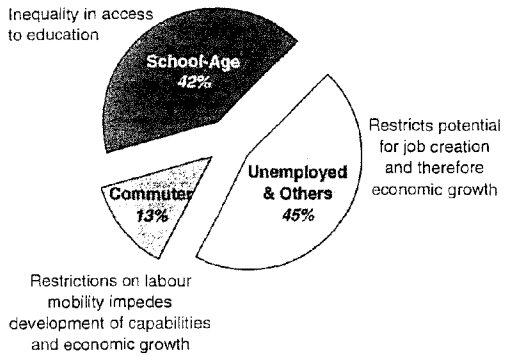
Customer Segments	Key Transport Needs (prioritised)	% of SA Urban Population (1996 = Black, 2020 = Grey)	Number in 1996 (m)	Growth to 2020
Strider (prefers to walk or cycle)	Cost	25% 23%	5.4	28%
Stranded (no affordable public transport available)	Cost	13% 12%	2.8	28%
Survival (captive to cheapest PT option)	Cost, Speed	19% 17%	4.1	24%
Sensitive (captive to PT but selects 'best' option)	Speed, Cost, Choice	10% 9%	2.1	25%
Selective (can afford car but willing to use PT)	Speed, Choice Convenience	19% 19%	4.1	39%
Stubborn (only uses car)	Convenience, Speed	14% 19%	3.0	88%
		TOTAL Urban Population	21.4 million	38% (1.4% pa)

Note: All customer segments rated safety as a key transport need
Source: MSA Survey and Analysis. Forecasts are based on MSA Analysis using WEFA macroeconomic forecasts

The **Strider** segment accounts for a significant number – 5.4 million – of the urban population, and prefers to walk or cycle as the most convenient way to travel. This group is generally satisfied with dimensions of travel time, affordability, and availability since, by definition, they enjoy good low-cost access to their preferred destinations.

The **Stranded** segment accounts for 2.8 million citizens, or 13% of the urban population, and is expected to grow by 28% between now and 2020 if nothing is done to address their needs. The transport system is failing more egregiously for this group than for any other: they lack affordable basic access to motorised transport and therefore have little ability to integrate with the rest of society or participate in the broader economy. The principal customer need is for low cost public transport. In the absence of this, two factors drive their curent lack of access to low cost transport: income levels and distance. As **Figure 27** below indicates, income levels are low because a substantial majority of the stranded are either scholars or unemployed, which carries negative implications for the country's ability to create jobs and economic growth, or extend educational opportunity.

Figure 27: Breakdown of 'Stranded' (Currently = 2.8m, 2020 = 3.6m)



Source: AMPS 1995, MSA Analysis

In addition, distances for the stranded tend to be long: 67% live in townships an average of 20km from CBDs or other work locations. Even on formal modes like bus and commuter rail, these distances cause high prices, which are unaffordable to this segment. The stranded who live in closer areas (suburbs, informal settlements, or inner cities) generally have access only to taxi, which is the highest priced mode.

The next segment, **Survival** passengers, covers 4.1 million people, or 19% of the current population. Their principal needs are for low cost, higher speed public transport. This group can afford to use public transport, but is 'captive' to the least expensive option – they have few choices, even within public transport. Over 70% of this group spends above 10% of their household income – the standard set in the White Paper – on transport services. Moreover, 46% of this group spends more time traveling than they would like, leading to a high level of dissatisfaction with both service and cost.

The **Sensitive** segment is still captive to public transport but has enough income that members can select the best transport option. This is the smallest segment of urban customers, including only 2.1 million customers, or about 10% of the urban population. The key dimensions of dissatisfaction for this group centre on speed and choice, with some additional unhappiness with prices. Of the Sensitive users, 47% said they are currently above their desired travel times, and only 12% have a choice of three modes, while 51% have a choice of two modes.

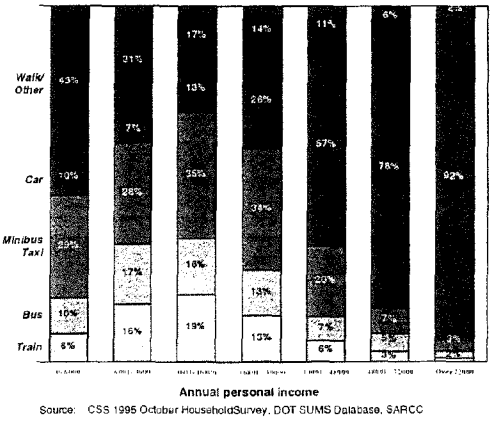
The **Selective** segment, which today encompasses 4.1 million people, or 19% of the urban population, will be one of the fastest growing in the future, with

expected growth of 39% between 1998 and 2020. This segment can afford a car but is willing to use public transport if it meets their primary requirements of higher speed, and greater choice and convenience. 43% of this group find themselves above their goal for waiting time, and even fewer – only ten percent – have a choice of three modes. In the twenty year view, this becomes a critical segment because of their ability to afford cars. They will only stay with public transport if it offers sufficient convenience and choice to make it attractive.

The final segment is comprised of the **Stubborn** customers. This group will *only* use cars, and represents 3 million people, or 14% of the current urban population. This group is expected to grow by significantly between 1998 and 2020, which will create significant challenges for urban areas in terms of road infrastructure and congestion. Members of this segment opt out of the public transport system altogether by using their cars, and cost is a minor issue for these customers, compared to the much more salient concerns of convenience and speed. Their car dependence is enabled by the excellent urban road network in cities and adjacent suburbs where the stubborn residents tend to live.

Several factors are fueling this growing car dependence. One, as illustrated in **Figure 28** below, is the relatively low income levels at which South Africans begin to use cars as their primary mode. MSA research indicates that once household income rises above R30,000 per annum, car use begins to dominate. The result is a situation with a much higher than average vehicle population per capita among middle income groups, compared to other developing countries.

Figure 28: Percent Modal Choice by Income Band (National Commuters)



Source: CSS 1995 October HouseholdSurvey, DOT SUMS Database, SARCC

Finally, at an overall level, all customers were highly dissatisfied with the level of safety and security they experience in urban transport.

In addition to customers' objectives for the system, the nation created specific goals for performance during the White Paper process. Measured against the national objectives for cost, journey time, and public transport usage stated in the White Paper, MSA found significant system performance gaps, as outlined in the chart in **Figure 29** below:

Figure 29: National Objectives and System Gaps

	National Objective	Gap[1]
Cost	• Expenditure on commuting = 10% of household disposable income	• Stranded cannot afford to travel • Most Survival spend more than 10% of HDI
Journey Time	• Commuting distance < 40km • Commuting time < 1 hour • Walking time < 15 minutes (1km)	• 30% of DoT subsidised bus trips exceed 40km target • 12% exceed target • 4% exceed target
Public Transport Share	• Motorised trips by public transport = 80% of total	• Currently 47% of motorised trips by public transport

[1] October Household Survey / MSA Survey

When viewed as a whole, the South African urban transport system is performing relatively poorly against the needs of key groups of customers, as well as against overall national objectives. The Stranded and Survival segments are particularly badly served in terms of cost, travel times, and choice. One segment that is well-served, however, is the Stubborn, which benefits from high income levels and a good road network for their cars. Even though the Stubborn are somewhat dissatisfied with the convenience of the system, by international and local standards they are exceptionally well served.

Against national objectives, key RDP goals are not being met, including basic mobility, basic access, and social integration. Workforce mobility is restricted, creating friction on national efforts to create employment opportunities. Current land use patterns leave commuters and other residents distant from key services that they need, and the system's overall inefficiency is creating high requirements for subsidy.

Moreover, unless dramatic action is taken, the performance of the system is likely to deteriorate over the next 20-25 years. Specifically, decentralised land use patterns will increase public transport journey time and cost, and increase car dependence. The number of the stranded will grow. The number of car users will double and road congestion will consequently worsen and have a significant effect on economic productivity and the viability of the public transport system.

Urban Passengers: Key Strategic Challenges

Based on the performance against customer and national goals, the key gaps in urban transport were distilled into four strategic challenges, and the underlying drivers of each, that the strategy must address:

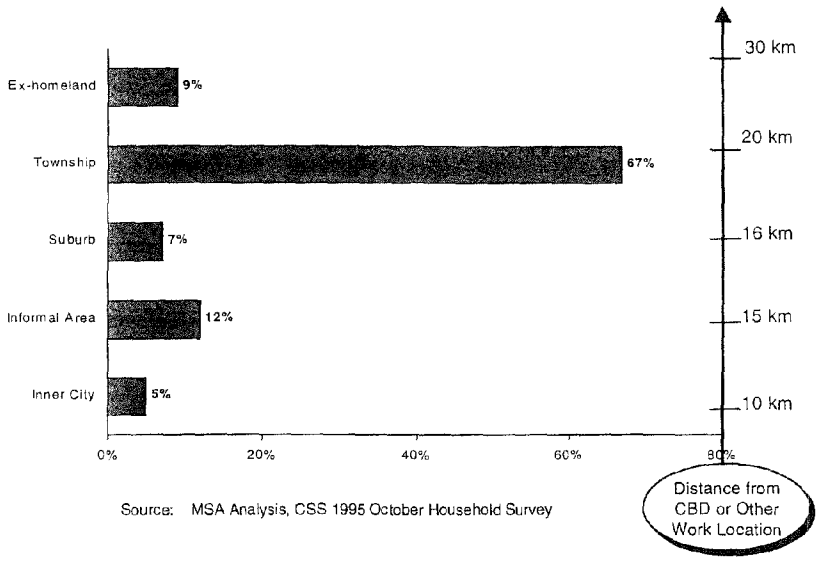
- *Lack of Affordable Basic Access, driven by*
  - Poor subsidy targeting
  - Past land use patterns
- *Ineffective Public Transport System, driven by*
  - Lack of financial sustainability and infrastructure investment
  - Past land use patterns
  - Poor subsidy targeting
  - Poor public transport planning, operation and regulation
- *Increasing Car Dependence, driven by*
  - High road investment
  - Past land use patterns
  - Poor public transport planning and regulation
- *Sub-optimal Spatial Planning, driven by*
  - Past land use patterns
  - Poor public transport planning and regulation

Key Strategic Challenge: Lack of Affordable Basic Access

As the case of the stranded illustrates dramatically, many citizens still lack affordable basic access to the public transport system, which impedes the ability to deliver on national goals like employment creation and equality of access to social services and education. Because distance and incomes are principally responsible for this problem, the key drivers of this challenge are past land use patterns and poor subsidy targeting.

Land use patterns determine the distance that many urban South Africans live from employment and services. One of the most serious legacies of apartheid is a warped pattern of land use, with low-income, primarily black residents living very distant from CBDs and other employment nodes in either townships or ex-homelands. This pattern is illustrated in **Figure 30** below, and the trend has continued in recent years with increasing settlement in informal communities which are also distant from key services.

Figure 30: Distribution of Passengers by Settlement Type

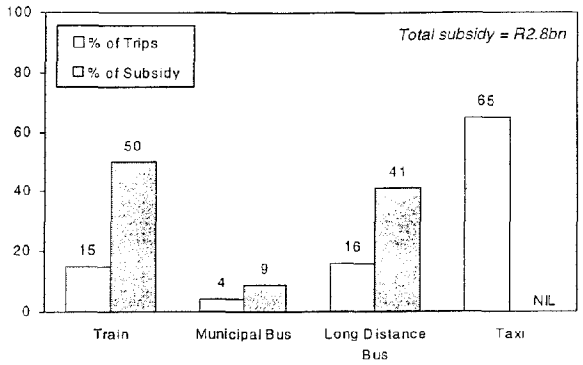


Source: MSA Analysis, CSS 1995 October Household Survey

The average public transport trip in South Africa is 20 km, which is 11 km longer than in developing Asian countries. The result is that South African commuters spend almost 40% more time traveling than their Asian counterparts. The cost impact is even more dramatic: a hypothetical reduction in trip distances in Pretoria of 10 km would save an estimated annual R350 million in passenger fares, R110 million in bus and rail subsidies, and 100,000 person years of traveling time.

The second principal cause of this problem is the ineffectiveness of subsidy targeting. Different levels of South African government spend R2.8 billion annually to subsidise long-distance buses, municipal buses, and commuter rail services. But the subsidy mechanisms continue to support the legacy strategy of promoting the mobility of the formal work force on formal modes. Commuter rail and subsidised buses serve mainly commuters and offer limited off-peak service. Almost 20% of the bus subsidies go to municipal services in primarily white, higher income suburbs. And taxi, the mode which is most accessible to most of the poorest, does not receive any subsidy at all. One illustration of this occurs with the Stranded: 78% have access to taxi, whereas only 21% have access to commuter rail, which is the lowest price, most subsidised mode. **Figure 31** demonstrates the mismatch between the amount of subsidy and the amount of traffic.

Figure 31: Comparison of Subsidy Levels with Market Share of Passenger Trips



Source: MSA Survey and Analysis, SARCC, DOT BIS, CSS 1995 OHS

Currently, only long-distance bus subsidies are targeted for a specific user group, but this still focuses on commuters.

Key Strategic Challenge: Ineffective Public Transport System

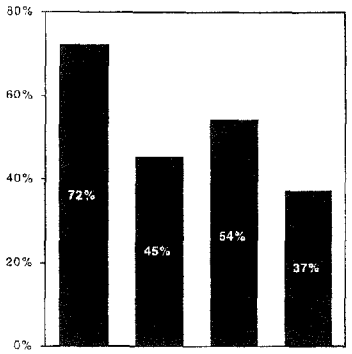
In addition to presenting a problem in its own right, the ineffecive public transport system, if not solved, will exacerbate the problems faced with road space and road congestion. Thus, solving it becomes of primary importance.

The current public transport system does not meet customer needs in terms of travel time, level of choice, and cost. Almost 50% of public transport users are dissatisfied with travel times, and only 10% of commuters have a choice of three modes. The system is of limited use for scholars, given its orientation around the needs of commuters and the limited level of off-peak service. South African public transport is relatively high cost compared to international benchmarks: services cost users 32% more than world averages, primarily because of the distance they travel. The result is higher system costs, deteriorating infrastructure, higher user costs, and poorer service for those users who are captive to the system. More generally, ineffective public transport severely restricts labour mobility, impinges on worker productivity, and impedes social integration.

Several factors contribute to this situation. One is the lack of financial sustainability of the urban public transport system. As with the freight system, owners and operators have substantially underfunded capital reinvestment requirements, as illustrated in **Figure 32**. Commuter rail, bus, and taxi are all spending well below needed levels to maintain and upgrade their assets. The result is poorer service, more vehicles out of service more

frequently for maintenance, and more safety incidents, caused more by lack of incentives in bus permit regulations, and cut-throat competition among taxis.

Figure 32: Current Capital Spending as a Percentage of Long-term Capital Requirements

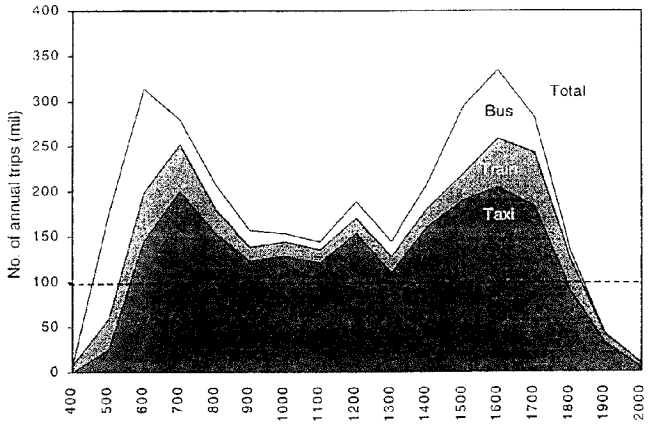


Note: ¹Includes all roads, not just urban; commuter rail estimates for 1998, actual 94-97
Source: MSA Financial Model

A second factor contributing to an inefficient public transport system is poor public transport planning, operation and regulation. Part of this problem derives from unclear and fragmented institutional arrangements and lack of capacity at many Metros for transport planning and regulation. However, regardless of the origin, inadequacy of planning creates high systems costs that could otherwise result in savings to the fiscus, savings to the end users, or additional revenue for operators to plow back into reinvestment in assets.

The best example of the planning gap appears in the uneconomic role of the modes currently at work in South African cities. In most countries, rail, with the highest fixed cost and the lowest marginal cost of taking an additional passenger, carries a substantial baseload of passengers. The next band is carried by buses, and the peak-load traffic travels on taxi, which has the lowest fixed cost and the highest marginal cost of the three modes. In South Africa, as **Figure 33** suggests, the typical modal roles are reversed, and taxis carry the baseload of traffic.

Figure 33: Modal Distribution of Annual Passenger Trips by Time of Day



Source: Various bus and train providers, Metrorail, MSA Analysis

The result is an additional system cost of at least R500 million per annum, the equivalent of almost 18% of the total annual direct subsidy to the system. This phenomenon is the direct consequence of a lack of integrated planning, because on many routes it allows taxi competition to reduce the ability of buses and trains to recover their higher fixed cost investments. The RDP recognised this modal warping, and recommended roles for each mode that more closely match their natural economics.

Key Strategic Challenge: Increasing Car Dependence

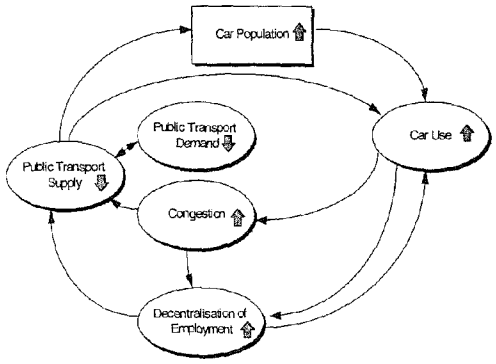
Between 1972 and 1996, the number of cars in South Africa increased by 72%, and forecasts suggest that it will increase again by 64% between 1996 and 2020. Four factors drive this trend: low car operating costs, land use patterns, poor public transport alternatives, and infrastructure investment in roads.

Car costs are low and are likely to decline between 1997 and 2002. Rising incomes and continued subsidy, through the MIDP, will make car ownership more affordable for more people. *Moving South Africa* estimates that the price of the most common medium-priced car in South Africa will decline by 19% in US dollar terms, or 23% measured in purchasing power parity[8]. In addition, fuel costs and license plate costs are quite low by international standards. Moreover, a variety of subsidies for parking and car ownership continue to warp the natural economics of the decision to own and use a car.

[8] Based on 1997 exchange rates and Toyota Corolla model

Several legacy factors also create an increasing reliance on cars in urban South Africa. Most importantly, past land use patterns created excellent urban road networks, especially to serve wealthier suburbs. Similarly, apartheid era spatial planning created long distances and decentralised nodes within metro areas, which, combined with good roads, encouraged car usage for those who could afford it. The combination of these two factors creates a powerful momentum for continued and increasing car use, especially when compared to the relative ineffectiveness of the principal alternative, the public transport system. This creates a vicious cycle for public transport, as illustrated in **Figure 34**, with the consequent reduction in the quality of public transport and increase in car-related problems like congestion and pollution.

Figure 34: The Effect of Car Dependence on Public Transport



In addition, new land use decisions act to reinforce the tendency towards dispersion. Individuals tend to build houses where land is cheapest, typically on the urban fringe, rather than infilling denser areas nearer to CBDs or other employment nodes. The consequence is a continued dispersal of houses into low-density arrangements which increasingly rely on cars as the transport solution.

The final contributing factor to this challenge reflects what would otherwise be a success story. Although investments in urban roads have not kept up with congestion in some Metros, there is a good infrastructure for the nation's urban car drivers. Established urban suburbs have approximately 75-80% of their current road spending needs met, compared to only 35% of current needs for long-distance roads.

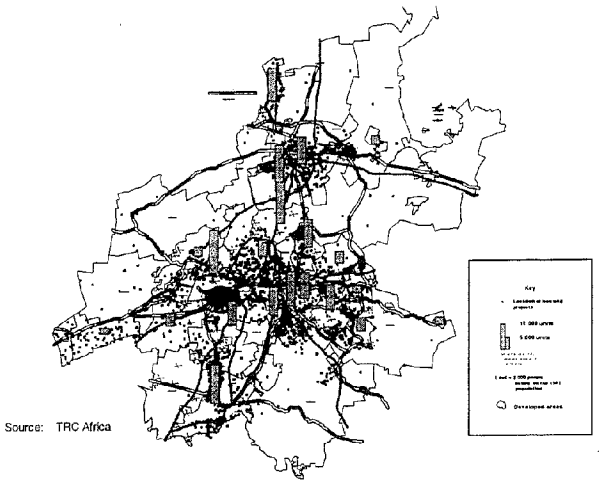
Key Strategic Challenge: Spatial Planning

As described in many parts of this report, spatial planning constitutes one of the key underlying drivers of cost and performance of the transport system. Its influence pervades the urban setting, in particular, contributing as a cause to all of the key strategic challenges. Spatial planning deals fundamentally

with long-term, difficult-to-change decisions about the use and tenure of land assets and the fixed investments that occupy it. Consequently, spatial decisions create a lasting legacy and therefore pose one of the most difficult challenges to transport systems all over the world. In South Africa, where distorted spatial planning formed the very backbone of the apartheid strategy, it creates an even more daunting obstacle to fixing a dispersed and high cost transport network. For example, the typical township or ex-homeland – home to a majority of a city's population – is situated 20-30 kms from the CBD.

As discussed above, spatial dispensations determine distances and densities, the two key cost and service drivers for transport. Current land use planning and development initiatives are exacerbating the spatial legacy by locating new housing far from major business centers and, in most cases, far from primary rail and road networks. **Figure 35** exhibits the location of planned housing projects in Gauteng, where many of the developments are situated on the perimeter of urban areas, outside urban areas altogether, or far from transport services.

Figure 35: Location of Planned Housing Projects — Gauteng



Source: TRC Africa

Currently, this sort of spatial planning occurs because of a lack of coordination or integration at the institutional level. Each individual institution plans the location of its fixed assets in a relative vacuum, maximising only according to individual departmental constraints or missions, without respect to larger systems costs of individual decisions. This pattern does not in any way ascribe ill intent or suggest poor results by government agencies or departments. Rather, it speaks to a need for a co-ordinated framework in which to consider spatial decisions.

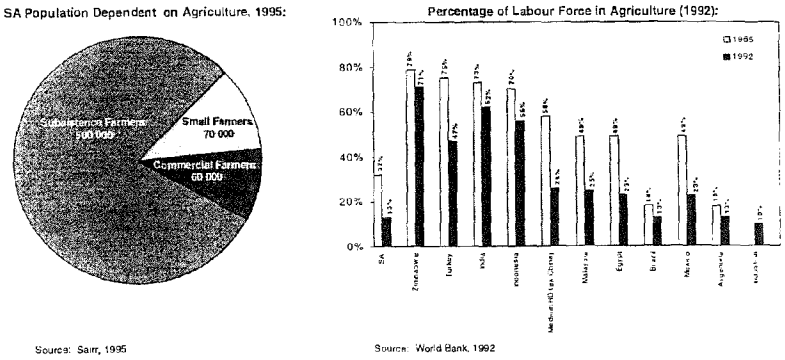
Solving the spatial dimension, therefore, is important not just for transport, but also to make it easier to provide other services ranging from education and health care to housing in a manner that is affordable to the government and can reach the highest number of targeted service recipients. In addition, better land use patterns can enhance social integration and other social objectives of the RDP. Thus, even though this challenge is probably the most difficult to tackle, if properly addressed, it creates the greatest returns.

7.2.2 Findings: Rural Customers[9]

Rural Customers: Current Situation and Current System Performance

In most developing countries, the provision of rural roads is directly linked to the need for rural residents to subsist and earn income through agriculture. The purpose of rural roads in these countries is primarily, therefore, to enable residents to ship agricultural goods to market. In most of the world, a sustainable rural community is based on agriculture. Due to the apartheid legacy, however, land tenure in rural South Africa is substantially different from other countries, with most productive land and agriculture concentrated in the hands of white commercial farmers. This results in a relatively low level of the population directly dependent on agriculture, and, as **Figure 36** indicates, a much lower percentage of the labour force engaged in agriculture than in comparable developing countries.

Figure 36: Agricultural Employment



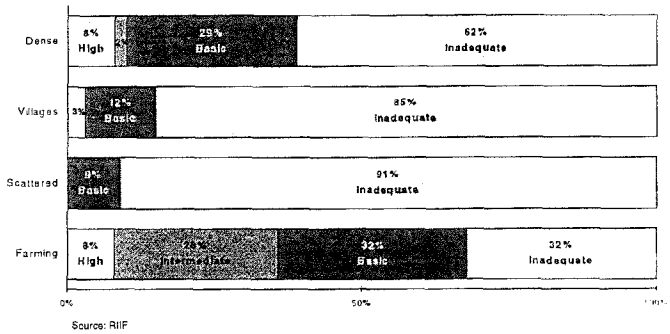
As a consequence of this land tenure pattern, over 37% of rural households depend on income sources generated outside their community. Four types of communities result from this economic base, and they have been characterised by the Department of Constitutional Development in its Rural Infrastructure Investment Framework (RIIF) as:

[9] *Moving South Africa* focused the analysis for this segment on rural infrastructure, rather than operations, as previous work – including the RDP – suggested that the primary gaps for rural customers pertained to roads.

- *Villages*: Population between 500 – 5000, with densities less than 5 households per hectare. The economic base consists primarily of pensions, public sector services, remittances, and some agriculture
- *Dense Rural Settlements:* Population above 5000, higher density, with an economic base dependent on pensions, public sector services, and remittances.
- *Farming:* Population up to 500, with wages and agricultural income forming the economic base
- *Scattered Settlements:* Population up to 500, with a similar economic profile to villages. Some residents live on communal lands.

Almost 80% of the rural population resides in villages and dense rural settlements, so these areas became the focus of the *Moving South Africa* study. Of these four types of communities, only commercial farm areas have close to adequate Level 4[10] road access to the main road network. As **Figure 37** illustrates, 85% of the current roads to rural villages are inadequate, compared to 32% for farming communities.

Figure 37: Condition of Rural Roads by Type of Settlement



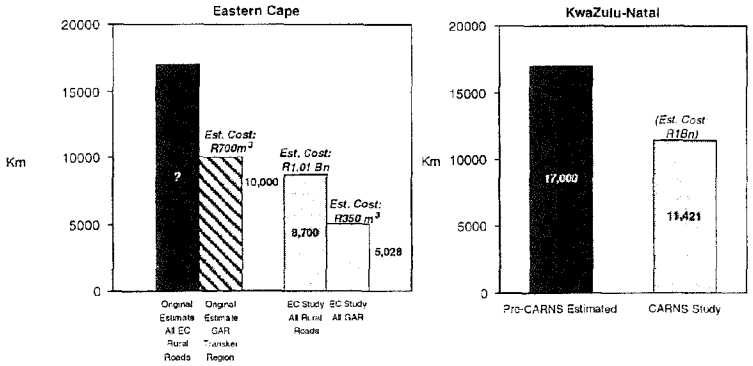
Focus on existing rural roads, however, does not answer the question of how many new level 4 roads are needed, or how many need significant rebuilding. Very little consistent data exist to suggest an answer to this question, and estimates range between 43,000 and 200,000 km of road. This range then yields an equally broad spectrum of cost to build, between R3 billion and R17 billion.[11] The lack of accuracy of existing data sources is confirmed by the CARNS rural road study in KwaZulu-Natal, and a similar follow-on study in

[10] A road that connects a community to the tertiary road network, usually unpaved

[11] Quantifying the gap in rural road infrastructure needs is made difficult by a lack of reliable data. Estimates on the number of *existing* Level 4 roads range from 100,000 to 200,000 km. Estimates of the number of these that are deficient range from 43% to 90%, while most existing surveys guess that no new roads are needed. Rebuilding cost per km figures range from R35,000 to R70,000, and new construction cost per km estimates fall between R30,000 and R60,000. Maintenance projections range from 4% to 5% of capital costs, cumulatively over 10 years.

the Eastern Cape. Prior to CARNS, provincial officials projected a need for 17,000 km of level 4 roads. After a detailed bottom-up study, CARNS found actual needs closer to 11,000 km of roads. In the Eastern Cape, the adapted CARNS study identified a need for half as many gravel access roads as previously believed. **Figures 38** illustrates the findings from both KwaZulu-Natal and Eastern Cape. The trend is consistently one of overestimated need for level four roads.

Figure 38: Rural Road Requirements: Eastern Cape and KwaZulu-Natal



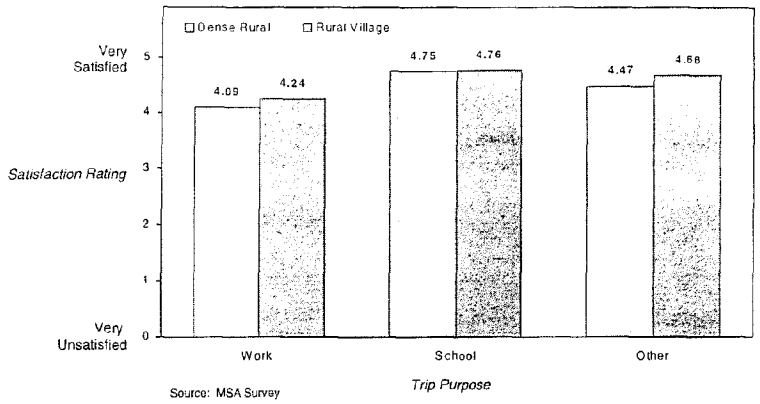
1 The reconstruction and development programme of the Transkei Road Network, Department of Public Works, Eastern Cape
2 Does not include maintenance
3 R70 000 average cost / km

Rural Passengers: Customer Satisfaction

Given the low level of road adequacy in most rural communities, *Moving South Africa* expected to find a high degree of customer dissatisfaction, especially with travel times. However, in the customer research process[12], rural passengers uniformly declared a high level of satisfaction with travel times, regardless of the purpose of the trip. They gave these opinions despite traveling 40-45 minutes each way for work. **Figure 39** demonstrates this trend:

[12] MSA rural customer research focused on interviews in four communities to provide a directional picture of customer sentiment. Results were not sufficiently statistically significant to warrant generalisation to all South African rural areas.

Figure 39: Rural Customer Satisfaction by Community Type



Paradoxically, customers expressed this high level of satisfaction even though they also said they would like to spend less time (about 13 minutes each way) traveling. Rural customers were most sensitive to – and most dissatisfied with – the *cost* of travel, although even in this realm, the most dissatisfied customers rated their satisfaction level as average (level 3 on a scale of 1 to 5). Dense rural communities' passengers were the most unhappy with costs, especially for travel to work. But when asked what level of cost decrease they would ideally like to see, the same dense rural customers suggested a figure only 8% below the cost of current monthly fares. Rural village customers sought even less relief from fares, in the range of 4% per month, despite the fact that 35% of these residents had no choice but to take taxis, the highest fare mode.

Overall, then, a portrait of relatively undemanding rural transport customers emerges, where people feel reasonably satisfied, even though they enjoy service levels far below the level available to urban public transport passengers. This may relate to the fact that many rural customers have not been exposed to higher levels of service in urban areas, and to the fact that their sense of the opportunity cost of their time is generally lower than that of their urban counterparts.

Be that as it may, many of the customer concerns, like cost, could be addressed with improved level 4 road connections to the main network. Road additions or improvements would reduce the cost and time for vehicles to serve rural areas, which could have a salutary knock-on effect on user costs.

Rural Passengers: Key Strategic Challenges

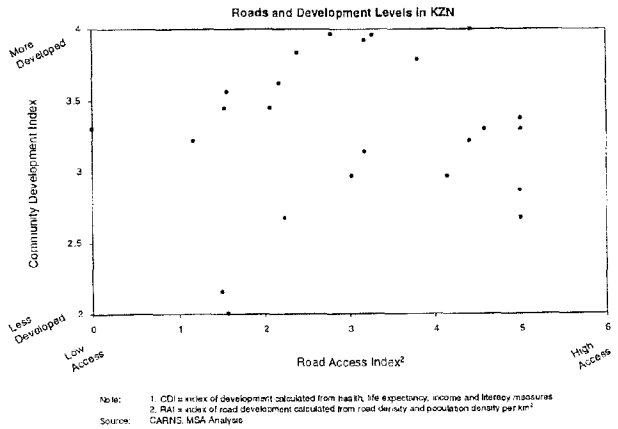
The principal challenge that emerges from this analysis is twofold. First, communities need more – or better – rural roads than they have currently. However, the work in Kwa-Zulu/ Natal indicates that they may not need as many as conventional wisdom has held. Nevertheless, most communities want more roads and there is insufficient funding to pay for the entire need.

Second, roads must be provided in a sustainable fashion to those communities that need them most. In many such communities, the economics of a road upgrade will not support the 15% IRR that is usually recommended as a return on investment hurdle. Thus, inherent in doing this is a requirement to develop a choice framework for prioritising communities and roads according to development needs, development potential, and other social impact measures (e.g. number of jobs created). Before acting on either challenge, however, it is clear that substantially better data about current rural roads and infrastructure will be required.

Key Strategic Challenge: Integrated Provision of Infrastructure

In the South African context, roads alone do not drive development. If they did, one could expect a high correlation between current road access levels and levels of development. However, the chart in **Figure 40** demonstrates that there is no such correlation in Kwa-Zulu Natal, site of the CARNS study. If a correlation existed, one would expect to find all of the communities clustered around a single straight line in the graph.

Figure 40: The Relationship Between Access Roads and Community Development



Note: 1. CDI = index of development calculated from health, life expectancy, income and literacy measures
2. RAI = index of road development calculated from road density and population density per km²
Source: CARNS, MSA Analysis

If more than just roads are needed to encourage development, then the challenge becomes one of providing infrastructure (including roads) in an integrated fashion.

Moving South Africa estimated that at least nine national government departments have some responsibility for meeting basic rural needs.[13] Departments define 'basic rural needs' differently, based on criteria which maximise returns on investment in their individual area of focus (while some do not define the term at all). And while some departments have developed sophisticated approaches to needs assessment and service provision, only the Department of Land Affairs and the Department of Constitutional Development have developed integrated approaches. Layered on to this problem is the fact that the co-ordination function rests principally at the local and provincial level, where capacity is most constrained. Taken together, it presents a task of similar complexity to that of co-ordinating spatial planning.

Key Strategic Challenge: Rural Road Prioritisation

The CARNS study in Kwa-Zulu/Natal offers the most sophisticated approach yet taken to this problem, providing developmental standards for level 4 road prioritisation. Those criteria included:

- *Development Potential* (for agriculture): communities with a higher presence of natural water resources, better terrain conditions, and good agricultural conditions score higher
- *Population Size*: higher population communities score better
- *Accessibility*: communities with higher population density and higher road densities (road km per square kilometer) score higher
- *Community Development Potential*: communities with higher life expectancies, better education levels, and higher income levels score better

CARNS weights the first two factors more highly, in an effort to ensure that roads investment is linked to community sustainability and development, but does not differentiate on the basis of a community's existing levels of access or existing levels of development. Nor, however, does the approach allow for a decision *not* to invest. A further need, therefore, is to build on the CARNS framework to develop a prioritisation methodology which would link rural road development to larger development objectives. The study in the Eastern Cape did extend this methodology and make adjustments in the prioritisation formula. Most significantly, it added additional measures into the calculus of development potential, including agro-forestry potential, tourism potential, and general job creation potential.

[13] Departments of: Constitutional Development, Education, Health, Housing, Land and Agriculture, Public Enterprises, Telecommunications, Transport, and Water Affairs and Forestry

7.2.3 Findings: Tourist/ Long-Distance Customers

Tourist/Long-Distance Customers: Current Situation and System Performance

Moving South Africa assessed customer needs for this segment of passengers by focusing on international tourists. Because they have the most choices, the most exposure to competing destinations, and are therefore most demanding, customer research targeted their needs as leading edge. In addition, MSA examined the needs of the nation as a customer of the transport system, in this case to fulfill the national objective to grow tourism arrivals, revenue, and hence the number of jobs.

A substantial amount of public discourse has focused on the size of the South African opportunity to expand tourism, and MSA found that, in fact, global average tourism spending as a percent of GDP, at 11.4%, is slightly higher than initially thought. By this standard, South Africa's current earnings of 5.3% of GDP still lags the world by a sizable margin. This discrepancy grows more acute when examining the market by type of customer, which offers more insight into the challenge that South Africa faces. When the figure is parsed among international tourists, and domestic tourists (including domestic business travelers), as is done in **Figures 41** and **42** below, South Africa's true challenges emerge more clearly.

Figure 41: International tourism earnings as a percentage of GDP, 1997

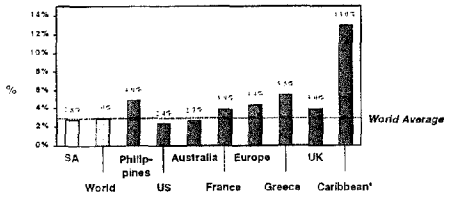
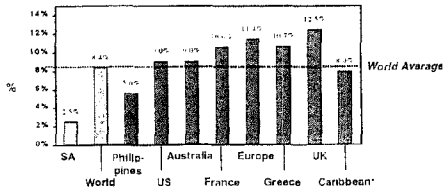


Figure 42: Domestic tourism earnings as a percentage of GDP, 1997

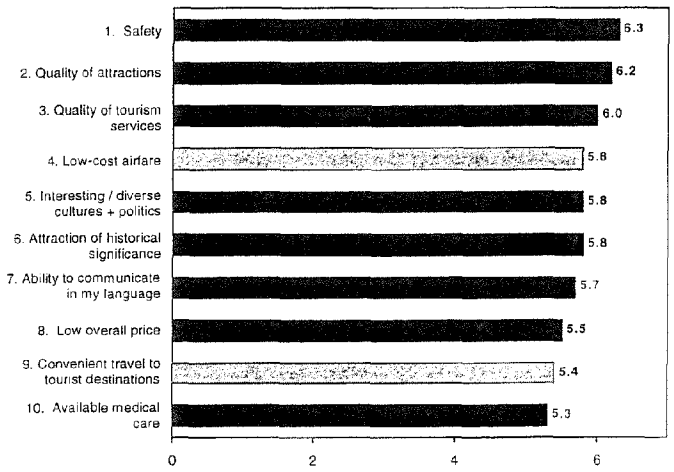


South Africa has already reached world average for international tourists, and the real opportunities lie in expanding domestic leisure and business travel. This understanding highlights the need for a sharpened tourism strategy, because the transport implications of targeting one group of travelers over another are substantial, from the perspective of infrastructure investments, service standards, or modal choices.

With international tourism already close to world averages, the system is currently performing well against this segment's expectations. MSA surveys revealed that transport represents a relatively low priority concern for international tourists. They found the general state of the long-distance

network to be satisfactory. International aviation, domestic aviation, airports, and long-distance national and provincial roads all scored high levels of satisfaction with tourists. In fact, as illustrated in **Figure 43**, international tourists rated only two transport considerations – low-cost airfare and convenient travel to tourist destinations – in the top 10 destination selection criteria.

Figure 43: Top-Ten Destination Selection Criteria — Importance Rating (1-7)



This finding highlights the fact that transport cannot lead in tourism development. Transport can create a bottleneck, but it cannot create the conditions on its own to make the country an attractive destination.

One reason customers are relatively satisfied and feel comfortable with transport as a low priority is that South Africa offers some significant cost advantages. For example, scheduled coach fares undercut prices in North America by 52%, and domestic aviation fares are 45% less expensive than world averages. Second, apartheid South Africa historically invested in its long-distance road network, to enable domestic tourism for the white population in an era of restricted international acceptance.

Long-Distance and Tourist Passengers: Key Strategic Challenges

Deriving from the situational analysis, two key strategic challenges present themselves, the first one upstream of transport, the second clearly within transport's domain:

- Clarify transport capacity requirements emerging from tourism strategy, and

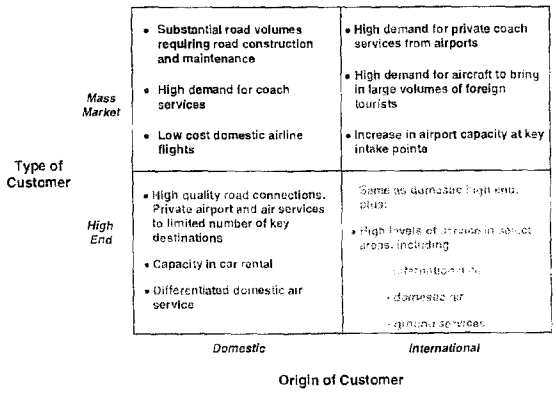
- Prevent transport from becoming a bottleneck on tourism growth
  - Ensure sustainability of key tourist service industries
  - Manage international aviation policy and potential conflicts between national interest and the interest of the parastatal.

These challenges focus on the tourist segment of this customer group rather than domestic long-distance passengers. This emphasis is appropriate, given the long-term policy objective for growth in tourism and its potential to generate revenues and employment for the country.

Tourism Key Strategic Challenge: Alignment with Tourism Strategy

Because transport requires heavy fixed cost investments with substantial lead time, aligning the system with a tourism strategy becomes essential. Different tourism strategies create very different ramifications for transport infrastructure, operations, and financing. A tourism strategy targeting international high end visitors would, for instance, require more emphasis on charter air services, high levels of service, and rental cars. None of these requirements would pose heavy capital investment requirements, but would require significant effort in training to ensure top-tier service quality. A strategy centered on international mass market, conversely, would place much higher emphasis on airport capacity, aircraft, and private coach service. These requirements would all entail significant amounts of capital expenditure, but potentially would employ many more workers. The impact of tourism customer targeting appears in more detail in **Figure 44**.

Figure 44: Tourism Implications for Transport



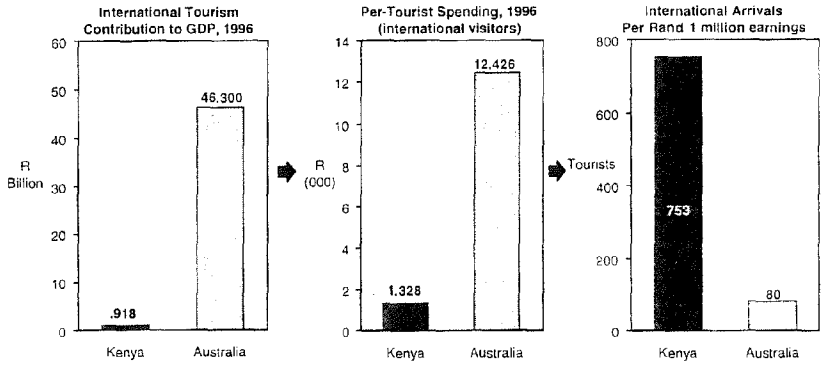
Australian and Kenyan Tourism Strategies: Implications for Transport

The contrasting strategies of Australia and Kenya provide a compelling illustration of different tourism strategies and the requirements these impose on the transport system in each country. Australia targets high end visitors and has aligned the strategy to serve their needs. While this results in a relatively low number of arrivals, they tend to spend substantial sums per tourist in-country (about 80 arrivals per R1 million in earnings), resulting in a tourism industry that contributes over R46.3 billion to GDP annually, or about 10.5% of total gross domestic product. The consequent requirements of the transport system are for relatively low levels of capacity for arrivals but a high service domestic network and high levels of service across all hospitality sectors.

Kenya, by contrast, has pursued a strategy to create jobs and focus on mass tourism segments in the lower and middle strata. This has generated over 750 arrivals per R1 million of earnings, and created substantial demand for tourism and transport services. Average per tourist spending is substantially lower than that for Australia, and the result is a contribution of R0.9 billion to GDP annually. These priorities have created massive requirements for the Kenyan transport sector, including airport capacity in Nairobi and Mombassa, high volume coach operations, and road expansion in key tourist areas.

These strategies – each of which may be appropriate for the two countries – provides insight into the consequences for the transport system of very different upstream choices about which tourism segments to target, and demonstrates that it is inappropriate for the transport sector to attempt to meet tourism requirements in the absence of a clearly formulated national tourism strategy.

Contrasting Tourism Strategies in Australia and Kenya



Tourism Key Strategic Challenge: Prevent Transport from Becoming a Bottleneck on Tourism Growth

Without a clear strategy emanating from the tourism community, however, transport will not be able to make the choices it needs to make to fully support the intended growth. Some transport entities have begun upgrading already, even in the absence of a very specific direction for tourism. The Airports Company of South Africa (ACSA) offers the most salient example, as **Figures 45** and **46** demonstrate. ACSA has planned substantial increases in capacity, based on forecasted 6.8% annual traffic growth over 30 years. The firm's profitability, with margins typically well above the cost of capital, ensures that it can meet future demands without difficulty.

Figure 45: Passenger Movements of SA's Three Major Airports

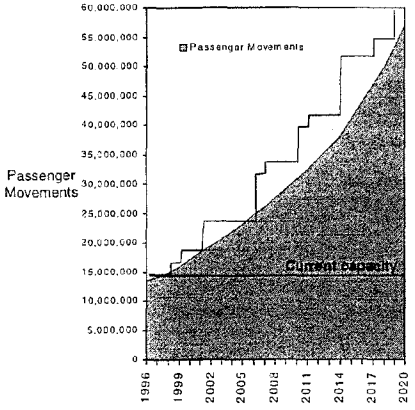
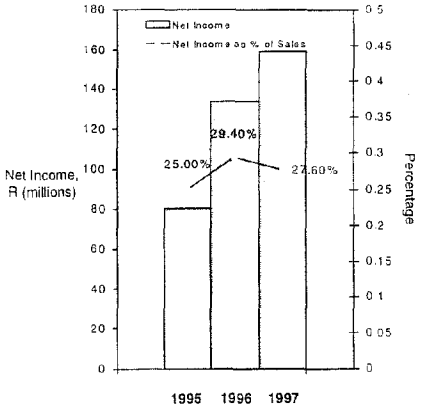


Figure 46: ACSA Probability

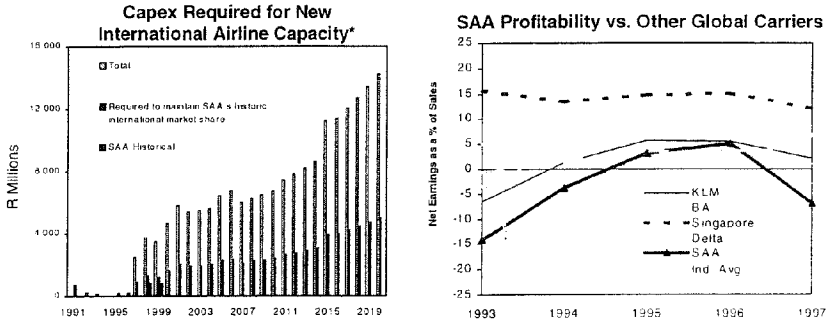


Not all players in the tourist market have the ability to cover the long-term capital requirements that will result from a significant increase in tourist volume. If they prove to be unsustainable in the long-run, or eke out a marginal operation without the necessary capital investment in facilities, vehicles, or maintenance facilities, they will prove to be a bottleneck on tourism growth. The transport strategy must, therefore, ensure firm-level sustainability, but must balance this with the national objective to remove bottlenecks to tourists entering the country.

While the domestic airlines earn average yields lower than worldwide averages, South Africa's domestic airline industry as a whole is still profitable enough to sustain itself. However, this is not the case for SAA in its international operations. Historically, the airline has historically invested enough to maintain the most modern fleet in South Africa, but the fleet is

aging well beyond industry average, and SAA has been unable to expand its fleet in accordance with growth in international passenger volumes. However, this bears in mind SAA's acquisition of a diverse fleet of aircraft and the resulting cost disadvantage as a result of sanctions. The view towards the future depends upon improving SAA's long-term sustainability[14], even just to maintain the airline's historic international market share. **Figure 47** suggests that SAA may have a problem keeping abreast of demand, not even accounting for fleet renewal or maintenance, given its continuing performance relative to international benchmark carriers.

Figure 47: Challenges Facing SAA



Note: *Does not include Capex for fleet renewal or maintenance; assumes weighted average mix of new aircraft types
Source: ACSA, SAA, Sun Air, ComAir, SA Airlink, DOT, MSA Analysis, One Source database

The sustainability of SAA is also muddied by its position as a part of Transnet. As with the freight sector operating units described above, the ability to cross-subsidise SAA has affected its long-run sustainability by insulating the firm from outside economic pressures. The unfolding corporatisation exercise will end this support.

Thus, enabling the existence of a sustainable, South African-based, international airline becomes a critical outcome for the strategy which will, in the short term need to accommodate the requirement to allow SAA limited leeway to prepare itself for a reduction in both protection and subsidisation. A second, equally important component requires addressing the issue of bilateral aviation agreements. Without bilateral agreements, SAA's inability to reinvest would have only minor consequences on the growth of inbound arrivals. In countries like South Africa with only one domestically-owned, long-haul international carrier, managing the conflict between firm-level interest and national interest becomes paramount.

[14] Transnet, SAA's sole owner, began a process in 1997 to find a strategic equity investor or international alliance partner to shore up SAA's long-term sustainability. At the time of the *Moving South Africa* conclusion, the effort was still underway but no partner had been identified.

Because the bilateral agreements allow carriers to influence the process of capacity allocation, those carriers who are less profitable on routes[15] (compared to their more profitable international rivals) have an incentive to restrict the number of frequencies, and thereby freeze market share. This process potentially creates two effects: limits on the number of arrivals into South Africa, or higher prices for tickets. To prevent either effect, it becomes essential for the strategy to manage the bilateral regime in a way that does not inhibit growth in tourism. This scenario has emerged in the recent past with regard to the Johannesburg-London route. While the specific issue is in the process of resolution, the scenario points to the possibility of effective 'brakes' on tourist intake via these international agreements. Thus, the issue of firm sustainability and bilateral agreements must be addressed together.

7.2.4 Findings: Special Needs Passengers

Special Needs Customers: Current Situation and System Performance

Moving South Africa, with the support of the Office on the Status of Disabled People within the Office of the Deputy President, launched a process to investigate the needs of Special Needs passengers. Special Needs Passengers (SNPs) are defined as customers of the transport system in any of three categories:

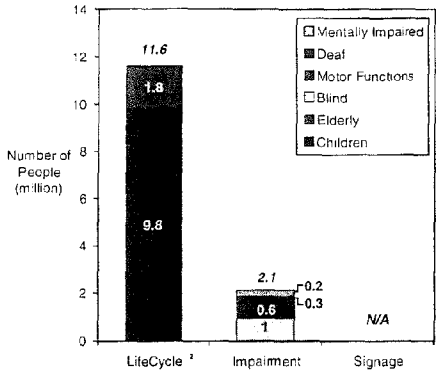
- *Life Cycle Passengers*: including children between 5 and 14 years old, people with health conditions, pregnant women, and the elderly (aged 65 and above)
- *Impairment Passengers*: any customer with physical, sensory, or cognitive impairment, including full or partial impairments in motor functions, sight, hearing, speech, mental or intellectual capabilities; and short people
- *Signage Passengers*: including people who are not literate and foreigners who are unable to read transport signs and notices and require non-verbal forms of communication.

MSA analysed the SNP population for the number of customers in each segment. Based on October Household Survey data, as illustrated in **Figure 48** below, a substantial majority of SNP passengers fall into the life-cycle segment. Although these segments are not mutually exclusive, it suggests that most SNPs – 11.6 million people[16] – are passengers for whom the system must improve in general, without substantial additional requirements for infrastructure or vehicles.

[15] According to SAA, lower profitability derives, in part, from insufficient route densities on some international routes

[16] Does not include pregnant women or people with health conditions, since these do not report in the OHS methodology

Figure 48: Breakdown of Special Needs Pasengers[1]



1 Categories are not mutually
2 Does not include pregnant woman or people with health
Source: October Household Survey, 1996

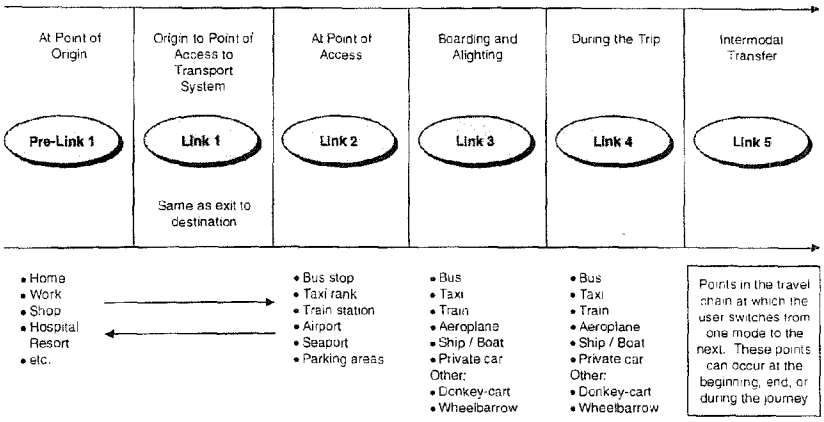
The second segment, Impairment Passengers, comprises just over 2 million South Africans. Almost half of these are visually impaired to some degree, though the data are unclear about the general degree of disability for each sub-segment within this category. The next largest group are those with motor function impairment, and together with the visually impaired, these two groups constitute 75% of the segment. Although MSA is still in the process of collecting data on needs for these SNPs, solutions for this segment are likely to require additional investment in infrastructure, vehicle fleets, and road furniture above and beyond those required to upgrade for the general passenger population.

No comprehensive data were available on the size of the Signage segment. However, most solutions for these customers would relate to signage and the distribution of information, schedules, and timetables. These issues are being addressed in the context of the Land Transport Bill and will need to be addressed in the course of the general strategy, as well.

Special Needs Along the Travel Chain

The joint team identified six phases of a journey at which special needs passengers can experience difficulty, as described in the 'travel chain' exhibited in **Figure 49** below.

Figure 49: The Travel Chain Impacting on Special Needs Passengers



Special users have identified three goals for their use of the transport system: full autonomy, risk equal to that experienced by people without impairment, and equal access to economic opportunity. These users expect the solutions from the transport system at three levels: infrastructure, information and communications, and operations.

Infrastructure issues provide a good illustration of the problems. The risk faced by each category of passengers at each link in the chain differs depending on a variety of factors. So, for instance, link one is the stage where the passenger moves from the point of origin to access the transport system. In this phase, surface characteristics negatively affect the transport experience for the following users: people with health conditions, pregnant women, the elderly, motor function impaired, and visually impaired. Communications issues, in contrast, affect primarily children, aliens (both illiterate and foreign), and mentally and intellectually impaired people.

Historically, transport has not systematically addressed the needs of special users. More recently, the Land Transport Bill, currently tabled in Parliament, makes specific (if brief) reference to the needs of SNPs. In addition, the NDOT, having noted the weakness by provinces in this area, is currently funding four projects in Cape Town, Johannesburg, Durban and a still-to-be-identified rural area. These projects will test different options for the mobility impaired, as well as raising the profile of this issue. Additionally, there are regulations in the drafting process which cover the special needs requirements which the normal transport system will have to address in any future planning processes.

The need for improved infrastructure, vehicles, and communications comes at a time when reinvestment levels and long-term sustainability in almost all modes are low, and capital to reinvest scarce. As a result, it is unlikely that infrastructure providers or operators will be able to immediately make changes in areas like surfaces, road furniture, signage, or buildings. Most of the changes will require new physical assets or new configurations of existing ones. But as the overall strategy works to shore up longer term sustainability and reinvestment, it may be possible to expect changes as facilities upgrade through the use of guidelines and regulations.

Thus, the key strategic challenge for serving special users arises in balancing the cost of improvements required to make the system accessible, with the national – and customer – objective to provide full access on a basis of equal risk and equal opportunity.

7.3 Findings: Cross-Cutting Issues

In addition to examining issues from the point of view of customers, *Moving South Africa* also performed a situational analysis of aspects of the system that cut across all customer groups. Although most of the project's resources explored the customer issues, the project identified key strategic challenges pertaining to these cross-cutting matters.

7.3.1 Findings: Roads

Roads: Current Situation and Current System Performance

The principal issue found in roads encompasses a concern for financial sustainability. South Africa owns an extensive road network that encompasses national roads, provincial roads, and local roads in all nine provinces. The paved network covers just under 60,000 kilometers, but is in danger of decline and already suffers from deferred maintenance. This contention is supported by several facts:

- Only 18% of national roads are rated in 'very good condition'
- Roads in urban areas are increasingly congested: although urban areas account for 68% of total kilometers, they carry 93% of the congestion and attendant environmental impact
- Only 35% of the needs for long-distance roads are funded
- Projecting out to 2020 along current trendlines, assuming no changes, the number of roads rated 'E' and 'F' quality[17] will increase by 12,000 kilometers, or over 20% of the network.

[17] Road quality (surfacing, sealing, grading, etc.) is measured on an A-F scale, with A being highest quality and F being completely deteriorated.

The current situation arises from a number of drivers, but the most important cause is insufficient funding. **Figures 50** and **51** illustrate the R40 – 57 billion backlog in spending and the annual R3.3 billion gap in financing just to maintain the current sized network[18] – already somewhat deteriorated – in a steady state.

Figure 50: Road Network Backlog, 1997

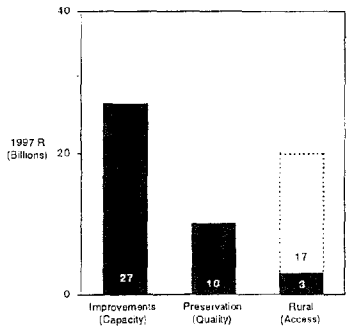
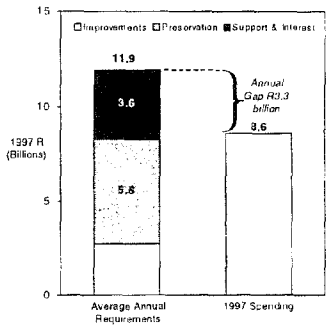


Figure 51: Annual Gap Between Current and Steady State Spending[1]



Note: [1]Spending required to maintain current level of service. Includes national, provincial, local and toll roads, road improvements, preservation and support services
Source: Financial Planning and Co-ordination of Rural Roads 1996, GIBB Africa analysis, MSA analysis

Such chronic underspending creates additional user costs, because the deferred maintenance worsens the roads, increasing vehicle maintenance costs and extending transit times. In addition, the funding gap will grow on its own even if the road network is not expanded, due to the fashion in which road maintenance costs increase.

Related to the funding problem is the issue of user charges. Currently, users do not pay for the use of the roads directly, except on toll roads. At the national level, users pay the fuel tax, but these funds go into the fiscus and are allocated to the provinces and the National Roads Agency on a budgetary, rather than 'user pays', basis. Thus, there is no transparency in pricing road use, so road use continues to grow even while road funding declines.

Even though all jurisdictions with responsibility for roads agree that the system is deteriorating, there are no common objectives and no shared basis for prioritisation of investment. Thus, jurisdictions spend funds for roads in multiple ways. The following anecdotes illustrate the range of objectives and funding streams that go into road planning and prioritisation today:

- *Urban Roads:* Gautrans in Gauteng is planning for the PWV9 or public transport alternative to relieve congestion, while

[18] Includes national, provincial, local, and toll roads; road improvements, preservation, and support services

Johannesburg Metro does not have sufficient funding to cover maintenance needs

- *Intercity Freight and Tourism Roads*: the National Roads Agency has prioritised a Strategic Primary Network on the basis of freight movements, and is seeking control of dedicated funding to ensure uniform quality standards on these priority roads.
- *Rural Roads*: Northwest Province considers the RDP redistribution objectives of paving gravel roads to be its principal need, but with overheads at 40% - 50% of budgets, little funding exists. KwaZulu-Natal, in contrast, prioritised rural road construction and repair needs through the CARNS development potential framework, but with a 40% budget cut can only perform essential maintenance.

Institutional fragmentation plays a substantial role, therefore, in keeping the system from coalescing around a single set of priorities.

Key Strategic Challenge

The principal key strategic challenge, long-term sustainability of the road network, is also covered in the sustainability section below. However, some of the drivers of this particular aspect of the problem are different. The main drivers include:

- Institutional considerations: fragmentation of authority, inefficient alignment, and unclear signaling and interpretation of national objectives and priorities
- Insufficient capacity at provincial and local levels to plan effectively
- Lack of clear economic signaling, both in terms of inter-government road financing and mechanisms for user charges; also, insufficiently specific balance between user costs and externalities
- Lack of adequate funding

Many of the other strategic challenges emerging from roads relate to safety and environmental issues, which are covered under externalities.

7.3.2 Findings: Externalities

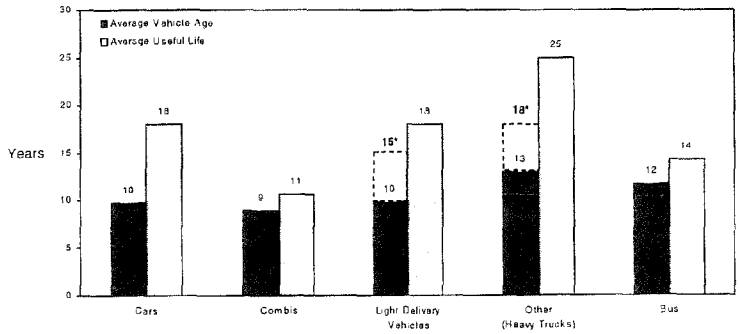
Current Situation and Current System Performance

In the realm of safety, South Africa performs at, or better than, world averages in commercial aviation and maritime safety. While rail safety still can and must improve its performance, it is clear that the overriding safety concern in South Africa must be road safety. South Africa achieves better results than comparable developing countries, but still endures a road safety record that is

much poorer than in most developed countries. South Africa's fatality rate of just under 10 per 100 000 vehicle kilometers is half of the rate in Turkey, but still almost 9 times the level of the UK. This amounts to over 10,000 accidents/ fatalities per year. Of the fatalities, 56% involve pedestrians, compared to only 19% in Australia. Even if South Africa were to bring the level of pedestrian accidents to developed country levels, the nation would still have a fatality rate that was 300% higher than in the UK.

Many factors contribute to creating this safety record, including institutional fragmentation, insurance and risk alignment, enforcement, and behaviour. One of the most salient contributing factors, however, is the low level of vehicle reinvestment, reflected in the average vehicle age in South Africa. The current vehicle 'fleet' is operating at 82% of its useful economic life, as **Figure 52** demonstrates. This vehicle aging, particularly among buses and combis, enables affordability for operators but creates increasing risk for passengers and road users. It also creates additional vehicle maintenance requirements, if safety is to be maintained.

Figure 52: Average Vehicle Age vs. Economic Life: South Africa



Source: CSS Vehicle Data Statistics, CSIR, MSA Analysis, SABOA, RFA
*RFA analysis estimates that average vehicle age has increased since the last census

Another cause of the problem lies in enforcement of the system. Enforcement is a particular issue in the area of truck overloading, where some hauliers are able to improve their costs by overloading their vehicles, secure in the knowledge that enforcement will be sporadic at best. While the hauliers realise a cost advantage, they create an additional cost in road maintenance and repair. Truck overloading is one of the principal sources of road damage in the country: the 30 – 40% of trucks that are overloaded cause 60% of the damage to the road network. KwaZulu-Natal has demonstrated the best record in enforcement, stopping six times as many vehicles as the next most aggressive province. As a consequence, the province has the lowest recorded

number of overloading incidents, at 35% of all vehicles checked.[19] Even with the best record in the country, KZN officials report that they would need an additional 218 officers, or 57% of existing staffing, to properly enforce the load limits.

Not only is enforcement potentially understaffed, but – more importantly – it is highly fragmented. Currently, over 465 local traffic authorities and 83 provincial stations have some responsibility for traffic enforcement. In addition, non-transport entities with a host of competing priorities, like the courts, are an integral part of the system. Speed limits vary widely among jurisdictions, and if drivers are caught their probability of bearing the cost is limited. *Moving South Africa* estimated that, adjusting for the probability of apprehension and then the probability of being served a warrant, the weighted average value of a R80 speeding ticket on the N2 in the Western Cape was R0.8 per fine.

This anecdote signals a larger issue within the South African road system, pertaining to the mis-alignment of risk. In general, the risk caused by South African road operators is not priced into their operating costs. So, for example, users pay into the Road Accident Fund (RAF), through the fuel tax, regardless of their safety records. In fact, some funding for the RAF originates from users who never drive the roads, like farmers or maritime operators. General private insurance is not yet universal and does not always price to an operator's risk. As a result, the true risk-adjusted cost of operating on the roads is rarely fully borne by the operator, and the cost is pushed somewhere else into society, external to the transport system.

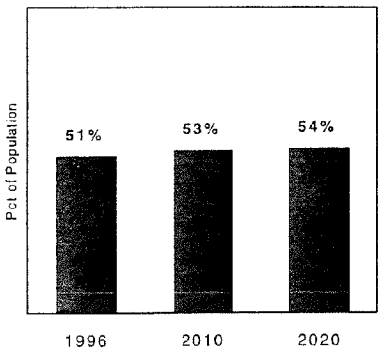
In the area of environmental externalities, the current situation is different from that in safety. South Africa is not experiencing an immediate crisis in environmental degradation parallel to the safety problem. Rather, the *Moving South Africa* findings suggest that there is substantial danger of a future problem because of the forecast increase in car usage. Because the situation has not reached crisis proportions in South Africa, little research exists to document the current environmental costs of transport. In contrast, a European study from earlier this decade indicated that, on average, externalities cost the European economies 4.2% of GDP, and higher in the less developed economies like Portugal, Greece, and Spain. This estimate of externalities includes road safety – in fact over 50% of the cost can be attributed to accidents.

Although South Africa has a different modal mix and use of fuel from the European countries, the trends discovered there are still relevant here. In particular, the finding that over 75% of environmental cost occurred as a

[19] Overloading is difficult to measure. Much activity occurs outside the usual opening hours of weighbridges and other enforcement stations, and some overloading is only a small percentage over the official limit. Nonetheless, it is widely believed that overloading is substantially underreported.

result of cars (47%) and trucks (28%) sends a signal to South Africa for the future costs. EU and OECD studies have suggested that car usage, congestion, and urbanisation are three of the key drivers of air emissions noise pollution, and climate change, and although no comprehensive study exists to quantify the effect in this country, the Department of Minerals and Energy has begun one such effort, and the results will be used to inform future policy[20]. Even without quantifying the effect, *Moving South Africa* examined the causes, which will all be increasing, as demonstrated in **Figures 53** and **54** below. Urbanisation will jump from 51% to 54% of a larger population by 2020, the car population will increase by 64%, and average highway speeds will drop, if nothing is done.

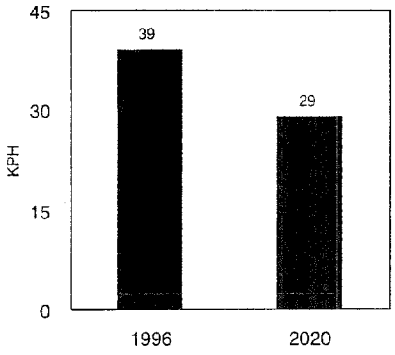
Figure 53: SA Urban Population Growth 1996 to 2020



Urban population will grow steadily through to 2020.....

SOURCE: WEFA

Figure 54: Average Highway Speed in Cape Town, 1996 to 2020



...creating substantially more congestion and corresponding environmental issues.

SOURCE: Cape Town Metropolitan Transport Authority, Moving Ahead, 1997

Thus, it is likely that additional costs will be pushed out into society as a consequence of the transport system as car dependence grows and there is no mechanism for pricing in the cost of environmental damage.

Key Strategic Challenges

In both environment and safety issues, the key strategic challenges revolve around the issue of balance. In both cases, the emerging challenge is one of

[20] Preliminary estimates by the CSIR, based on the European data, suggest a total externality cost – including safety – in the range of R0.22/vehicle km, with only R0.048 per vehicle/km currently recovered by the Road Accident Fund.

balancing a system where there is better alignment of risk – primarily through pricing of the cost of the risk – with the affordability of the system. Additional charges which allow the users, instead of society as a whole, to bear the costs they incur will raise user costs and hurt affordability. In addition, two of the modes that create the most externalities, trucks and taxis, have historically been a source of SMME job creation in the transport system. If operators cannot pass through fully risk-adjusted costs to their customers, then some risk going out of business. Thus, the challenge becomes balancing proper risk alignment with creation of viable SMMEs.

Embedded in the above is a challenge to properly align the risk-benefit tradeoff that road operators make. A final challenge, as a part of implementing any solution, pertains to consolidating or coordinating across the institutional fragmentation that currently inhibits proper enforcement.

7.4 Findings: System Obstacles

The final category of key strategic challenges identified in Phase 2 consists of obstacles to the system's performance, principally shortfalls in skilled human capacity and issues of long-term financial sustainability. Without either of these factors, the system will never be able to deliver customer satisfaction over time, nor will it have the basis from which to innovate and upgrade its performance. As a result, *Moving South Africa* examined the issues pertaining to both. The term 'sustainability' refers to the ability of a firm or entity to sustain itself in business – for both capital and operations – through its own means, without outside subsidy or support.

7.4.1 Findings: Human Capacity

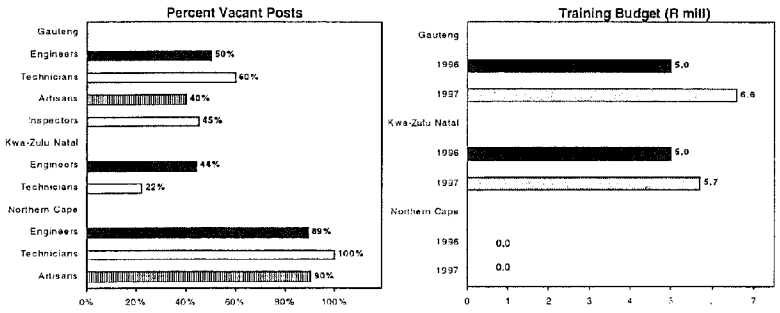
Moving South Africa found evidence of substantial capacity gaps in the current system. These gaps are a natural outgrowth of the tension between a need for new skills resulting from new priorities and a new constitution with the results of a system engineered to support previous national objectives. Thus, it is not surprising to find that in 1995, South Africa rated worst of 46 countries in a survey of human resource development practices. Whereas the pre-transition economy stressed labour creation in transport jobs, the new economy that is competing globally needs transport workers with sufficient skills to create *value* in their work. This represents a substantial shift, and one which is embraced unevenly across the sector. Transnet, for instance, spends over 4.5% of remuneration on training, but many private bus and freight competitors – particularly the smaller ones – spend less than 1% of remuneration on training.

In addition to a lack of personnel with value creation skills, two other gaps emerged. First, South Africa lags other economies in the use of advanced logistics, and this emanates, at least in part, from a shortage of adequately

skilled logisticians. As the manufacturing and retail economy grow in sophistication and move towards better precision and greater flexibility in supply chains, this skill gap will constrain the South African economy and its ability to compete globally.

Perhaps the most glaring skills gap, however, derives from the new constitutional dispensation. With nine provinces holding increasing responsibility for transport service delivery, the capacity within government becomes a critical potential obstacle for transport to meet the national and customer objectives. While all provinces are experiencing technical and administrative skills shortages and high turnover, the problem is most salient in the newly established provinces, and the least amount of training occurs in the provinces that need it the most. **Figure 55** compares the human resources staffing vacancies and training of Gauteng, KwaZulu-Natal, and Northern Cape provinces.[21]

Figure 55: Capacity Challenges



Source: Gauteng, Kwa-Zulu Natal, Northern Cape Provinces

In some provinces the situation is even more acute: the budget for Eastern Cape transport only allows enough money to cover administrative personnel, leaving no funds for road construction and maintenance. Beyond the numbers and the training, the most important aspect are the skills requirements themselves, which are shifting rapidly as the role of government in transport evolves. As provinces gain responsibilities, new skills are needed in the realm of land use/infrastructure planning, contract design and management, monitoring and enforcement, and multi-modal passenger system research, design, and support. These skills are also needed at the national level to help create and propagate the vision and make the critical scope and density decisions.

Human Capacity: Key Strategic Challenges

[21] Northern Cape numbers appear to be higher because vacancies represent slots missing from a small base (e.g. 4 technicians posts are all empty)

The challenge for any strategy is to enable the system to create capacity for new roles in both the public and private sector, address the skills gap for existing transport managers and workers, and align the providers of training with the changing needs of the sector. The further challenge is to create new capacity in a way that reinforces the shared transport vision that will be needed for a system to be effective, and to do it within the confines of the constitutional devolution of authority to the provinces.

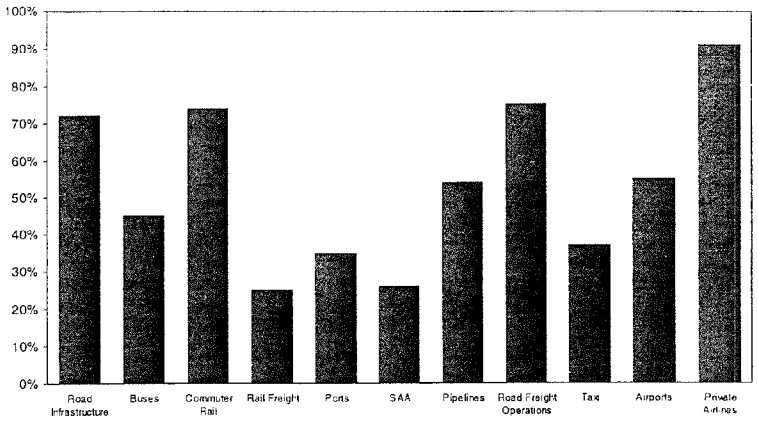
7.4.2 Findings: Financial Sustainability

The problem of financial sustainability, although presented last in this report, is one of the most serious issues facing the transport system over the long run. The concern for sustainability arises from the goal of meeting customer goals and national objectives over time; if the system cannot support itself, customers will invariably be dissatisfied. There are many reasons why sustainability matters. First, and foremost, it is important for meeting customer needs for cost, levels of service, capacity, and modal choice. Second, sustainability is a necessary condition for upgrading, though it is not sufficient unto itself. Third, transport is a long-term industry – especially reinvestment in infrastructure, which requires advance planning and funding availability. And fourth, loss of one industry could destabilise other parts of the system, creating undesirable effects on customers, system costs, and service levels.

Many other sections of this report have referred to sections or subsections of the industry that appear to be unsustainable; indeed, only airports and international airlines appear likely to be able to guarantee long run sustainability. MSA has already detailed:

- The R3.3 billion annual road underfunding,
- The capital reinvestment below required levels for almost all modes, detailed in **Figure 56** below,
- A fleet which, on average, is operating above 80% of useful economic life,
- Externality costs not currently borne by operators who incur them, and
- Cross-subsidisation within some entities that perpetuates poor operating practices at otherwise money-losing operations

Figure 56: Estimated Capital Spending as a Percentage of Long-term Capital Requirements



Note: 1. Commuter rail reflects estimates for 1998, actual 1994-1997
2. Includes international carriers
Source: MSA Financial Model

Taken together, all of these data suggest a severe inability for the system to meet the needs of customers in the coming years if nothing is done to address the issue. Furthermore, these findings suggest a severe resource constraint or a system that simply costs too much, or both.

Financial Sustainability: Key Strategic Challenges

Among the causes of the sustainability problem, four stand out: insufficient financing; escalating externality costs; low skill levels to address the problems; and failures in feedback mechanisms. The challenges, therefore, entail addressing these causes systematically, as well as making choices and setting priorities.

One of the most important challenges to address is that of feedback mechanisms, those elements like pricing and capacity planning that either signal value to customers or enable the system to expand in response to increases in demand. Feedback mechanisms are the single most critical way in which a dynamic system can regulate and upgrade itself – only if clear signals are sent and received can entities adjust their services to improve customer satisfaction, raise quality, or, if necessary, reduce service.

Moving South Africa identified five types of feedback loops (see **Figure 57**) that were currently, in some fashion, malfunctioning:

Figure 57: Feedback Loops

Desired Outcome of Feedback	*Examples of Broken Feedback Links*
1. Add capacity in response to demand growth	• International airline capacity restricted by bilateral agreements • Commuter rail line extensions not funded even where demand exists
2. Effectively use existing system capacity	• No incentive to travel off-peak on buses or commuter rail • Congestion is a blunt and slow feedback mechanism for car users
3. Improve provider efficiencies	• Historic bus permits did not provide feedback to improve operating efficiencies • Cross-funding in Transnet reduces urgency to improve operating efficiencies
4. Offer types and levels of service demanded by customers	• Public transport service terms (e.g. quality, routing, price) are dictated by government, not the customers • Taxi industry profitability dependent on organising cartels rather than meeting customer demands
5. Pricing that signals actual value	• Externality costs not fully borne by the users that create them • Road use costs not fully or directly recovered in pricing • Rail general freight not pricing to full long-term cost

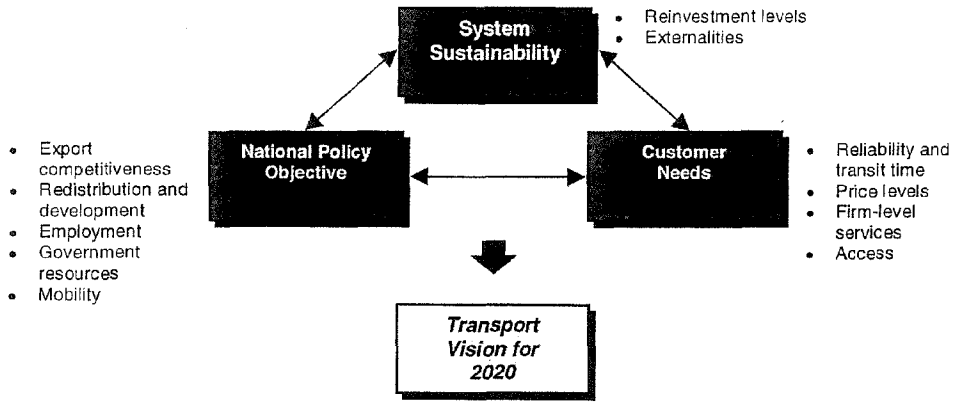
Thus, a paramount challenge for the strategy is to effectively repair the feedback loops so that the system can restore proper signaling. More than any other change, this is the most essential, for it enables the transport system to modify itself over time in response to conditions that will inevitably change between now and 2020.

8. STRATEGY RECOMMENDATIONS: OVERVIEW

General Principles

The guiding premise of the strategy is the satisfaction of customers of transport, principally the end users of the system, but also the nation, in the service of fulfilling national objectives. Thus, the strategy works to propagate a *vision*, a set of ideas that integrates the needs of transport customers and the needs of policy-makers, while ensuring that the system can deliver on these needs in a sustainable fashion into the future. Sometimes this will require making trade-offs amongst those different needs, and the strategy framework provides a mechanism for these choices to be made. **Figure 58** demonstrates the foundation of the vision.

Figure 58: Foundations of the Transport Vision



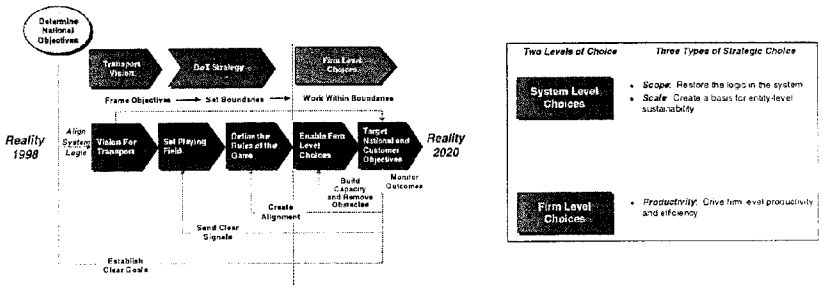
The vision of the strategy becomes the critical component in a decentralised delivery environment such as the one found in South Africa. The vision effectively defines the guiding set of principles that grounds the strategy in action. The objective is to provide a set of guidelines that allow for everyday choices. MSA seeks to define a set of guidelines that will allow for coordinated activity, taking the system into strategic alignment around its core set of choices.

Once the situational analysis had identified and articulated the key gaps in the system and the strategic challenges facing transport, the MSA team then evaluated a number of potential 'visions' for the overall system, based on the

findings of the customer research and the potential national objectives to be prioritised. These were then reduced to a single integrated vision for transport. Once this vision, encompassing the strategic transport objectives for the system, was established, then the project moved into the realm of specifying strategic actions, and ultimately specifying the criteria for the tactical actions that should follow from these upstream choices. The creation of a vision for the strategy, however, does not tell the NDOT, the rest of government, or the industry *which* actions to take.

To inform this next level of decision, *Moving South Africa* established a hierarchy of choice, as is illustrated in **Figure 59**.

Figure 59: The Choice Hierarchy



The two highest orders of choice – those relating to scope and role of modes (including the optimal scale economies for each mode) – must be decided at the system level, and managed from there. The choice hierarchy requires critical strategic choices to be made first: those, in particular, related to the desired **scope** of the transport system. Put simply, how broad should the system be, or how far should it reach? What is the density of traffic moving over this system? This choice sets out what MSA calls the *strategic vision*.

With limited funding available from the government or from industry, and with insufficient human capacity to operate the system, scope must be the first choice. Furthermore, transport economics fundamentally depend on *density* and *distance*, and both of these factors are directly affected by scope decisions. These choices ultimately define the complexity of the network, and the resulting levels of service and reliability delivered.

Choices about scope must be made with reference to applying these limited resources most efficiently within the system in a focused fashion.

The next set of decisions at the system level is that of the desired **role of modes** within the system, which are reflected in the *strategic actions* taken. Given the heavy fixed cost nature of transport assets, it is possible to realise

substantial economies of scale by loading high volumes of traffic over the fixed assets. This can lead to greater efficiency, higher utilisation, and lower average costs. However, to answer role of modes questions, it is essential to determine not only the scale advantage in each mode, but also the service characteristics of each mode, and where there should be a choice of modes. Many of these issues reside at the firm level, but are within the ambit of the strategy due to the substantial fixed cost consequences of such decisions.

Ultimately, decisions about **scope** and **role of modes**, taken together, will determine the extent and size and composition of the fixed cost backbone of the transport system. These choices constitute the principal work of the strategy, since they pertain to the task of overcoming the enormous disadvantage created by dispersed spatial industrial and residential economies. The choices about scope and density – the consolidation of the core transport assets in the economy such that they provide a focused, low cost backbone for the system overall – become the first decisions of the strategy. These decisions also set the stage for the service of the non-economic goals of the government.

As a key outcome of the strategy must be the extension of service to the Stranded and the continuing support of the Survival segments, MSA sought to create a flow of benefits that provided firms with the basis for long-term sustainability within a service extension framework. In principle, the systems benefit from strategic choice and alignment must be reinvested in bringing cheaper and better transport to urban passengers, export manufacturers and rural and special needs passengers.

The third arena for choice is the realm of improving firm-level competitiveness (the platform). This is where most of the *tactical actions* to fulfill the strategic vision occur. These actions can be taken by government, to create, for instance, appropriate competitive environments, or enhanced buyer power. Here the principal objective of the strategy is to fix the signaling mechanisms, between government and firms, amongst firms, and between firms and their customers. Thus, the key actors in this realm are firms, who will need to take steps – consistent with the strategic actions – to improve operating efficiencies, raise the level of service quality, extend services or make pricing decisions.

Institutional and regulatory arrangements therefore exist as a *consequence* of other strategic decisions taken further upstream. The strategy is otherwise neutral, and does not propose a 'correct' institutional structure. This, as well as ownership arrangements, becomes an *output,* dependent on other decisions. The strategy is indifferent to these choices, as long as they promote the strategic vision, create rising levels of productivity, and serve customer needs.

Finally, based on the strategies for each portion of the system and the situational analysis data (including the international benchmarking and global trends work), the strategy distills a set of key strategic principles with which to guide future tactical actions, and assure successful implementation.

In defining these principles, MSA recognises that an activist, developmental government has a funding role in respect of investments in pursuit of national objectives. The social returns from various investments must properly be viewed as economic returns in pursuit of key national objectives. Investments of this nature – key strategic allocative choices – must be transparent, measurable and accountable for specific asset allocation decisions. It is critical that the impact of decisions of this order be limited to their particular development arena, and that clear signals of value are transmitted into the system, and in no way distorted customer decision making elsewhere in the system.

The term 'ring-fencing' is used on occasion in this report to refer to such clearly defined allocative choices in order to emphasise the point that such choices – while valid and important in meeting specific national objectives – do not compromise the sustainability of other parts of the system.

9. STRATEGY RECOMMENDATIONS: FREIGHT CUSTOMERS

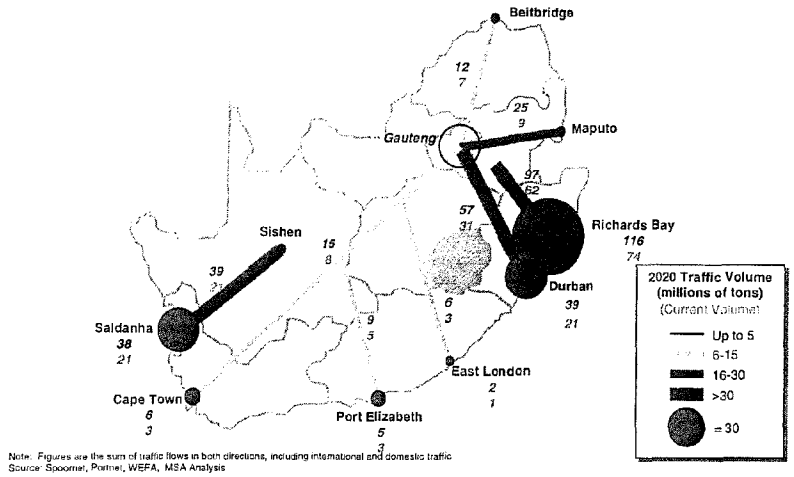
Freight: Review of the Current Situation

To understand the freight strategy, it is important to review the summary findings of the Phase 2 situational analysis, because the customer needs, national objectives, and system sustainability issues are the foundation of the strategy choices.

Customer Needs and Demand Patterns

The freight system has been consolidating along major corridors. The industrial base has historically concentrated in Gauteng, and more recent location decisions by firms have tended to perpetuate that pattern. Thus, shipping patterns have increasingly radiated from the north-center towards key nodes on the perimeter. This trend has accelerated over time, despite several projects since 1994 aimed at dispersing growth along newer corridors and in SDIs. This trend can be seen most clearly when examining both the road and rail network utilisation: both have high concentrations of freight volumes running along relatively few corridors. Looking towards 2020, overall freight flows in South Africa – based on macroeconomic forecasts and current industrial strategy – are expected to continue to consolidate into a limited number of primary freight corridors representing nearly half of the total freight movements, as displayed in **Figure 60**.

Figure 60: Current and 2020 Freight Volumes and Destinations

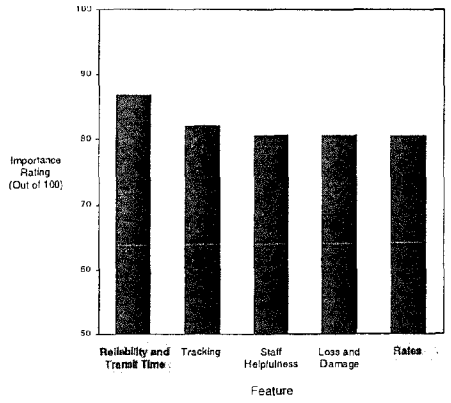


Note: Figures are the sum of traffic flows in both directions, including international and domestic traffic
Source: Spoornet, Portnet, WEFA, MSA Analysis

Given the current industrial priorities and industrial location plans, MSA does not, therefore, foresee a substantial short term shift in the patterns of trade or the location of industry, but rather an intensifying of demand along existing freight corridors. DTI, the Department with jurisdiction over industrial location decisions, has emphasised removing the distorting effects of past government behaviour, and expresses an intent to ensure widespread benefit from industrial development. In the absence of a clear dispersion programme, however, MSA concluded that the geographic pattern of demand in the future – the breadth, location, and distance – will largely mirror and amplify that experienced today.

Customer needs along these corridors of demand center on the improvement of reliability and transit times, and – to a lesser extent – a reduction in prices. Their priorities focus on firm-level service issues, probably reflecting the inability of the firms to innovate and upgrade. **Figure 61** reflects graphically these freight customer priorities.

Figure 61: Top Five Features Rank Ordered by Importance



Source: Research International, Spoornet, MSA Analysis

National Policy Objectives

The national policy objectives are derived from statements in GEAR, the RDP, and interviews with senior government officials. They are consistent with specific industrial policy objectives, and require that the transport system provide five outcomes. Not all of these outcomes are achievable without making trade-offs against others. The requirements of the government, as a customer of the transport system, are:

1. Excellent service for export customers to enhance their global competitiveness

2. Job creation and the encouragement of SMMEs, but not at the expense of competitiveness
3. The correction of apartheid-driven spatial imbalances, in both development and redistribution
4. Optimal use of scarce resources, with minimal dependence on the fiscus
5. RDP objectives, including meeting basic needs

System Sustainability

As described in **Section 7** above, the system is operating well below needed levels of reinvestment, with some participants, like Spoornet, only able to meet 25% of their long term capital expenditure needs in 1997. In addition, some costs in the area of externalities are still counted outside the system, thereby disguising the true cost and true sustainability of the system. Thus, the system sustainability performance objectives are to improve the levels of reinvestment within the industry and to internalise or minimise the externalities that the transport system causes.

Taken together, the customer needs and demand, national objectives, and sustainability requirements create a set of integrated performance objectives for the freight system into the future, and these objectives are the starting point of the freight strategy.

Freight System: Performance Objectives

The clear message from the analysis was that the freight transport system must deliver increased value creation in the long-term. To achieve that, the imperatives, or performance objectives of the system become:

- Increased value to customers through increasing the competitiveness of businesses
  - Improving reliability and transit time for freight
  - Lowering transport system costs
- Increased profitability and sustainability in the transport industry
  - Decreasing the distorting effects of cross-subsidisation
  - Increasing the potential to reinvest
  - Promoting value-based competition over price-based competition
  - Internalising externalities to the maximum degree possible
- Decreased burden on the fiscus
  - Funding the non-commercial activities, to the extent that they achieve important national objectives, and if the cost of the user paying exceeds what is affordable to the customer group

Freight Strategy: Summary of the Vision

The recommended strategy for freight is oriented to meet these performance objectives for the system, both now and in 2020. Three main components constitute the vision for the freight system, and they will be elaborated in the body of this section. Within each leg of the strategy, a series of actions will be required in order to accomplish the vision. The three strategic imperatives can be summarised as follows:

- Lower systems costs by
  - Building density in the transport system
  - Building economies of scale in the different parts of the transport system
  - Improving firm-level competitiveness by raising productivity, through removing obstacles to their improvement

- Increase reliability and improve transit time by
  - Building density in the transport system
  - Improving integration of the value chain and focusing the modes to optimise their service potentials
  - Removing bottlenecks currently in the system
  - Ensuring there is sufficient reinvestment to maintain quality infrastructure and operations for prioritised customers

- Offer customer choice through improving the ability of the system to meet differentiated customer needs through the creation of tailored systems
  - Restoring price and value signals in the system
  - By building an industry platform which drives the system to differentiate and innovate
  - Building capabilities in logistics and other advanced transport skills

Taken together, the accomplishment of these imperatives will ensure a transport system that is sustainable and flexible enough to meet customer and national needs between now and 2020, and will be detailed below.

Freight Strategy: Range of Actions Required

No one set of actions will deliver on the vision that MSA articulates for the freight system. Rather, multiple efforts, composed of actions at all levels of the system, will be required in a concerted fashion in order to meet the performance objectives. Some of these actions clearly fall into the domain of government, particularly those that pertain to creating density, appropriate role of modes, and removing the obstacles to firm-level competitiveness. Other actions, including the firm level improvement of operating efficiencies, pricing decisions, or customer service become the responsibility of individual

firms in the transport sector, and generally fall beyond the scope of the MSA strategy.

Some of the actions taken, therefore, are more strategic in character, whereas others are more tactical in nature. MSA has focused on the strategic actions, in an effort to clear the blockages and signaling mechanisms in the system that will enable others in the transport sector to then make rational tactical decisions about customers, markets, service levels, reinvestment, ownership structure, or efficiency.

At the highest level, the strategy requires three main streams of strategic action to achieve the vision. These actions are:

1. *Building density in the transport system through focusing freight flows in select corridors*
    - Support and reinforce current trends toward density
    - Provide best service to the majority of customers
    - Invest to build the 'backbone' of the freight transport system
    - Reduce complexity and widespread investment requirements

2. *Effectively using the different modes within the transport system*
    - Focus the role of modes in the different parts of the system
    - Maximise scale economies within each mode
    - Offer differentiated services where economically sustainable

3. *Improving firm-level competitiveness*
    - Remove barriers to improving firm-level productivity
    - Improve integration of the value chain and different modes
    - Remove bottlenecks currently in the system
    - Ensure sufficient reinvestment to maintain quality infrastructure and operations
    - Restore price and value signals between customers and providers
    - Building an industry structure which drives the system to differentiate and innovate

Freight Strategy: Detailed Description

Each of the three strategic imperatives for the freight strategy requires a different combination of actions from within the three streams of action.

Performance Challenges and Strategic Focus

Of the four interrelated freight transport systems in South Africa, the situational analysis identified general cargo export and import as the area requiring most improvement, as illustrated in the table in **Figure 62**.

Figure 62: Challenges in the Current Freight System

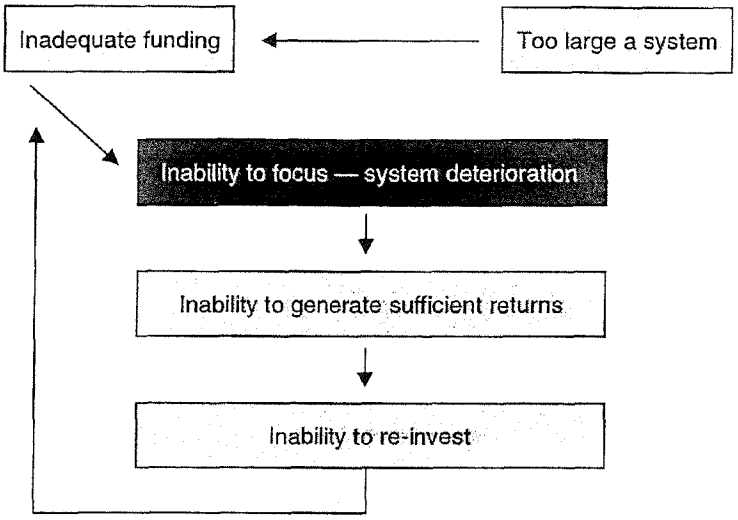
System	Performance	Issues
Domestic	• Customers generally satisfied	• System sustainability • Externality costs
Bulk Export	• World best practice	• Reinvest where required
General Cargo Export and Import	• *Service gaps* • *Cost gaps*	• *Export competitiveness* • *System sustainability*
SADC	• Cost gaps • Service gaps	• Priority of this system relative to the other systems • Barriers to cross-border traffic

The strategy does not ignore the issues raised in other segments of freight transport, but rather focuses primarily on the issues related to international general cargo. The general vision applies equally to decisions pertaining to freight other than import or export general cargo.

Freight Strategic Imperative: Focus

As the situational analysis demonstrated, resources – whether financial or human capacity – for the transport system are highly constrained and shrinking, leading to concerns about the overall sustainability of the system. By reducing the systems cost and focusing the investments of time, money, and effort, transport achieves the most delivery to customers as possible out of the least amount of funding. It enables the country to unwind the apartheid legacy, as well, by breaking a vicious cycle at the point of focus (see **Figure 63**)

Figure 63: Breaking the Vicious Cycle Through Focus



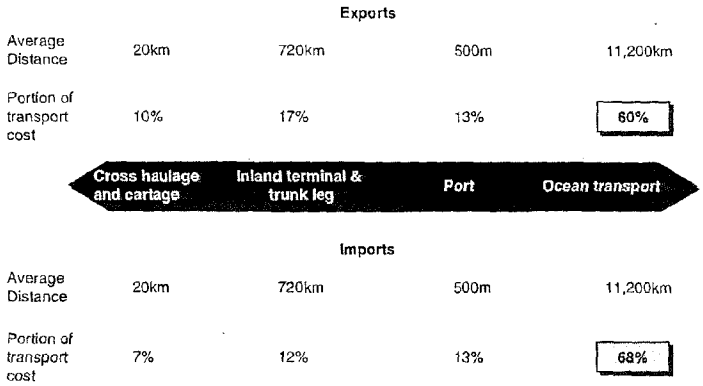
The benefit of lowering systems cost is that it creates cost savings in the transport chain to enable better competitiveness. The nation must then determine how to spread the benefits of the cost savings amongst the various stakeholders.

The second principal benefit that a focused system allows, is the delivery of a much higher level of service and reliability, since it reduces the complexity entailed in operating and maintaining financial stability. This, in turn, creates the platform for upgrading the system later on, to provide continually higher levels of service as customer needs evolve over time.

Managing Ocean Freight System Costs and Service Levels

The ocean freight portion of the containerised transport chain accounts for 83% of the travel time and 60% - 68% of the cost of shipping. This is driven principally by an average distance of over 11,000 km from international markets. In comparison, inland transport requires only 11% of total travel time and 19% - 27% of costs, as demonstrated in **Figure 64**.

Figure 64: Distribution of Transport Costs Along the Value Chain



Note: Based on case studies
Source: Industry interviews, Portnet, Spoornet, MSA Analysis

Thus, the majority of the system costs and transit time occur in the maritime portion of international container trade. Meanwhile, South Africa's current advantage in ocean-going export container rates per nautical mile will erode as trade moves into greater balance, in the middle of the next decade. The result could cause an increase in ocean freight rates of 18% - 25%, depending on the trading region.

Given the competitiveness of the international ocean freight business, there are three cost drivers available to manage the costs of containerised ocean freight: number of stops per ship, distance traveled per ship, and size of ship. A number of alternatives to address these drivers of cost were examined, but only one alternative – the consolidation of containerised export flows into fewer ports – positively affects all three simultaneously. Global trends in container traffic, driven by the rising power of a few global ship lines, suggest that South Africa will be subject to increasing pressure to consolidate ports of call[22]. Other countries have begun to consolidate container ports already, and the introduction of larger vessels is accelerating this trend.

Ocean Freight Trends

Global trends in container traffic indicate that South Africa will be driven to consolidate ports of call for larger ships by increasingly powerful ship lines over the next 20 years. This trend is due in large part to changing supply and demand dynamics that are shifting the patterns of competition.

[22] This trend does not only affect South Africa. Container ship lines like Maersk have already signalled the four principal ports serving eastern North America that its new generation ships will call only at one hub port, with other ports sending feeder cargo via coastal vessels.

Changes in container ship line dynamics include:

- **Reduction in port calls** - the continuing increase in average vessel sizes is leading to a stagnation, and even reduction, in the absolute number of ship calls at main container ports, in spite of continued strong growth in liner shipping volumes;
- **Shrinking customer base** - slot charters, alliances and mergers and acquisitions are all reducing the number of commercial entities calling at ports;
- **Hub ports** - selected hub ports are winning important roles as connection and relay points;
- **Fierce pressure on prices** - container ocean freight rates will continue to fall, further squeezing the already thin margins, which will put pressure on ports to reduce rates.

At the same time, ports are getting bigger as the introduction of larger ships requires deeper waters, larger cranes, larger terminals and better inland connections as carriers strive to realise the economies of scale necessary to maintain margin. Ports, such as LA/Long Beach; Hampton Roads; Bremen/Bremerhaven and Singapore, which develop innovative responses to these pressures, are likely to secure a leading-edge position in a rationalised industry.

Thus, the question for South Africa becomes one of either leading or following the global trend in containerised freight. An analysis of consolidating distance and ports of call indicate that up to 11% savings are possible in ocean freight costs, but only if multiple stops are avoided and European traffic consolidates in a west-facing port. Focusing on fewer core container ports would also reduce capital required to upgrade the inland infrastructure, however, this must be balanced with port infrastructure requirements. Consolidation would have an added benefit of meeting customer goals for timeliness, reducing travel times from all regions.

Consolidation of export container flows into fewer ports would represent a significant change from current practice. The average container traveling to or from South Africa does so on a ship making three port calls. However, the barriers to voluntary rationalisation by a specific ship line that currently exist are largely either short-term in nature or removed through other aspects of the strategy.

Barriers to Rationalisation of Port Calls

Rationalisation in the global container ship line industry is at an all time high on the major East-West trade routes, and is beginning to extend to smaller routes as well. The formation of major alliances and large mergers in the major league runs parallel with the propensity for slot-hire on traditionally

competing lines in the rest of the industry. This consolidation is caused by the dramatic decline in freight rates that are now, in 1998, lower in absolute terms than they were 10 years ago.

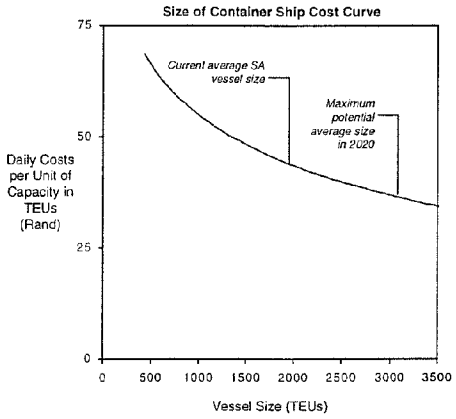
Although container traffic between Southern Africa and Asia has largely consolidated, full rationalisation of ports of call is still a long way off. According to the major container ship lines trading in SA, they would welcome the opportunity to rationalise as much as possible but they face the following constraints:

- There is first-mover disadvantage to the first line to rationalise, as they are likely to lose customers in the short term;
- Volumes between the KwaZulu-Natal hinterland and Europe are significant, and it will be difficult to consolidate these at a west facing port;
- The imbalance between import destinations and export origins and seasonal demand, further compounds the problem;
- Major shippers, ships' agents and freight forwarders continue to have a substantial influence on port rotations;
- Current delay and wind problems at existing large ports require that a 'relief port' be on hand.
- Current port pricing structures do not reflect the actual costs of calling at smaller ports

These barriers are, however, primarily short-term in nature and the action plans emanating from the MSA strategy should lead to the removal of these barriers to enable the system to achieve the benefits of a rationalised container ship industry.

Another reason to consolidate at fewer ports is to enable ship lines to operate fewer small ships and more large ships, which have substantially lower operating costs per TEU due to much better economies of scale. Increasing the average vessel size up to 3100 TEU by 2020 driven by increases in overall volume, could decrease the cost of ocean freight by up to 17% for South African shippers (see **Figure 65**). Some of the benefits in the increase in vessel size would be offset by two factors: volume growth could lead to increased frequency, and hence continued use of small vessels. Also, smaller ships serving niche markets would somewhat dilute the full increase in vessel size. This growth in container ship size could also affect requirements for port navigation channels, terminal infrastructure, and service levels, although these depend on maximum vessel size, not average vessel size.

Figure 65: Size of Ship Cost Curve



Note: Daily costs including operating costs and capital costs; average based on largest six ship lines serving South Africa
Source: Industry Interviews, MSA Analysis

A key requirement of any strategy predicated on reducing containerised ocean freight costs is that the savings on costs are passed back to South African freight customers. Current competitive dynamics suggest that this will occur, given the number of competitors calling at South African ports, and operating margins – currently in the range of 4% - 5% – are healthy enough to allow reinvestment and lower prices.

Achieving Scale

Only through consolidation of its ocean freight and ports systems can South Africa realise significant savings on containerised cargo. Different visions exist for doing so, as well as different approaches.

- An *incremental* vision, which would reduce the number of ports of call by bypassing minor container ports;
- An *East-West* vision, which optimises not just ports but also the entire inland corridor feeding into the ports. This vision would create one east-facing international container port serving East Africa, the Middle East, Asia and Australia, while a west-facing international container port serves Europe, North America, and South America. Other ports would transfer cargo to these ports via coastal vessel, in competition with rail and road freight.
- A *partial East-West* vision, as above except the local KwaZulu-Natal traffic which should go through a west-facing port continues to use the east-facing port. This vision would essentially be a midpoint between the two previous visions and likely more representative of 2020 reality.

MSA's analysis indicates that the volume impacts of the incremental vision would be modest, whereas the volume impacts of the east-west vision could be substantial, depending on the ability to optimise feeder systems to the two ports selected.

A focussed study to determine and select the core ports and define the strategic relationship between them and other existing ports should be initiated immediately. Investment in supporting infrastructure to the core, feeder, and special purpose ports must be clearly understood.

Feeder and Specialised Ports

The trend by container ship lines to reduce the number of ports of call has given rise to a distinct hierarchy among the world's container ports/terminals supplying services to this sector of the industry:

1. **Global/Mega hub port** - situated primarily on the East-West trade route;
2. **Regional hub port** - non global East-West and North-South hubs that service the global hubs;
3. **Direct call ports** – ports visited by the majority of carriers with vessels ranging from 1,000 to 3,500 TEU, as part of a typical rotation;
4. **Feeder ports** – ports that relay cargo to and from regional hubs, and are also open to direct calling by small vessels.

Many of the small and medium-sized ports around the world are currently, or will be faced with the problem of re-positioning themselves, choosing to become:

- **A feeder port** - geared for small vessels and fast handling rates. Entrance channel and draft requirements are likely to be minimal, but a reasonable local road network will be required. Extensive inland transport systems, however, will not be necessary, allowing good service levels for local traffic without significant additional investment in port and inland infrastructure.

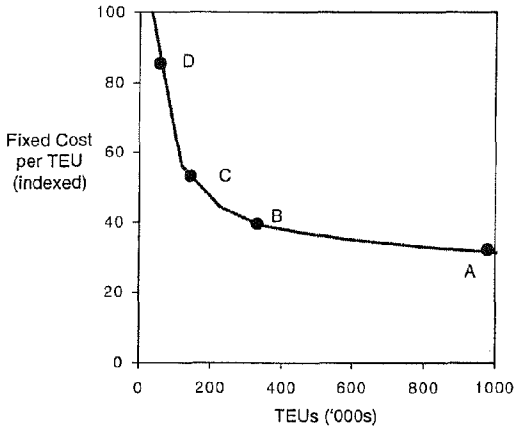
- **A specialised/niche port** - aligned to specific types of vessels suited to the needs of specific customers. High service frequency and fast turnaround times will be imperative. Dedicated, rather than general purpose, inland transport systems will be required as a matter of course, allowing customers to obtain a tailored/differentiated system without the need for common-user facilities.

Alternatively, if there is no compelling economic and or social rationale for the continued existence of a port, it could be converted into a real estate development; or it may be rationalised.

Each vision can be approached from one of two perspectives: a *customer service* approach, or a *leave-it-to-the-market* approach. The customer service approach focuses on achieving maximum productivity and throughput by organising core container ports and feeder ports to have predictable high volume deliveries. It would let specialised ports concentrate on meeting the needs of local customers. However, from the vantage point of 1998, it is impossible to predict how customers will segment, so this approach will be difficult to enact in the short term.

The second approach, leave-it-to-the-market, would simply leave all ports in place and remove all barriers to competition, permitting the market to operate and find its natural equilibrium. This approach carries the disadvantage of potentially diluting some of the scale economies required to achieve the cost savings from larger container ships calling fewer ports. These scale advantages appear in **Figure 66**, which demonstrates the improved cost of operation as port berths increase, due to increases in capacity utilisation.

Figure 66: Optimal Container Port Scale Economics



Note: Assuming a fixed arrival schedule and an average waiting time that is 10% of average service time; annual throughput per berth, @ 100% capacity = 130 000 TEUs
Source: UNCTAD, Portnet, MSA analysis

Such a scale curve, at current utilisation levels and number of berths, implies that both Ports A and B have sufficient scale to realise efficiencies. It also implies that Port D is a sub-scale container facility. Taken together, this suggests that over the next 20 years, the smaller ports, if possible, should be repositioned as feeder ports or specialised ports serving specialised customers with a different economic basis. Under this scenario, the targeted East and West ports should be the core of the containerised export freight system, with on-purpose designed ports serving specific customer needs.

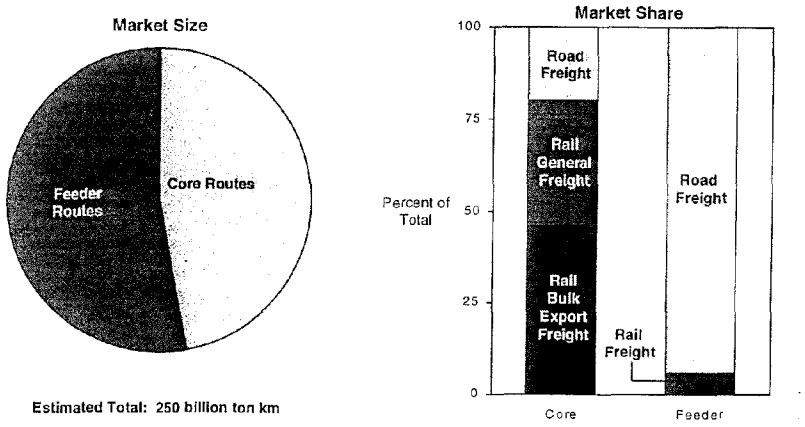
Improving Port Service and Reliability Through Consolidation

As important as reducing the systems cost is the objective of improving reliability and transit times. The Phase 2 analysis determined, for instance, that the average vessel waits 13 ½ hours, and that 61% of all vessels are delayed. Consolidation will assist in improving this situation, but many of the drivers of customer dissatisfaction are other system-level and firm-level drivers. Random vessel arrivals and low levels of capital funding are the key system-level forces influencing poor performance, but there are also substantial operating inefficiencies at the firm level. These inefficiencies include structural concerns like terminal configurations, and operational issues low crane productivity, low crane intensity, inefficient links between customers agents and ship lines, and constraints on systems and equipment. Substantial improvement will require a concerted effort by ship lines, ports, and infrastructure investors. Consolidation would also assist in lowering transit times by reducing ports of call. An MSA analysis indicated savings of up to 11% were possible if ship lines reduced from three to one port of call.

Managing Inland Shipping Costs

Consolidating to fewer, larger container ports to take advantage of ocean freight savings requires a similar inland strategy to realise the full benefits of increased density and economies of scale, while maintaining and improving service levels. Thus, the strategy for the inland freight system – which is already in a process of consolidation – recognises the trend, makes it explicit, and organises around this emerging reality. This consolidation is inevitable, based on 100 years of industrial location decisions and, more importantly, very real constraints on capital and capacity. The majority of freight flows are already consolidated on the core lines, even though they comprise only 50% of all lines (see **Figure 67**). The strategy simply structures the policy around this growing reality by recapturing the appropriate modal economics. Thus, as with ocean freight, MSA is attempting to move in front of a trend, rather than have to catch up with it in the future.

Figure 67: Current Traffic Flows



Source: RAU Road Freight Database, Spoornet, MSA Analysis

The inland impact of volume consolidation creates several imperatives:

- The rail/road/coastal vessel system must deliver to the large ports in a manner which will allow for the management of key needs of customers: cost, reliability, and transit times
- The system must be integrated for seamless transfer from rail/ truck/ coastal vessel to global vessel in a fashion which minimises waiting time for the ships, without excessive capital investment
- The inland corridor system to the port must be a system capable of delivering high volumes of goods onto the dockside

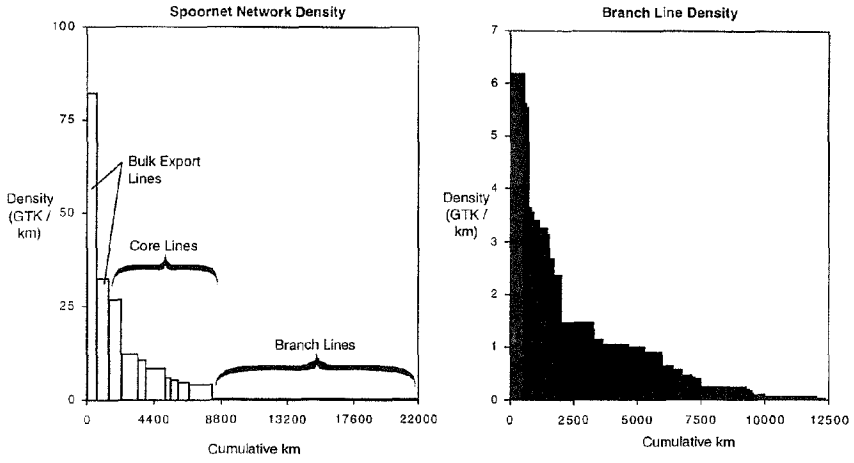
In the service of these imperatives, there are multiple opportunities to find densities, economies of scale, and operating efficiencies in the inland transport system.

Managing Rail Systems

It is both possible and important to improve Spoornet operating efficiencies, as better operations at the firm level will lower the overall systems cost of inland freight. Some possibilities include increased asset utilisation, rationalised supporting operations in maintenance centres and marshalling yards, and investment in more efficient assets like signaling systems and rolling stock. Such actions could improve Spoornet's cost position by nearly 4 cents per NTK. However, structural factors such as length of haul, level of road freight competition, and double stack difficulties will impede efforts to reach world-best operating costs.

The rail network in South Africa is a combination of two high-density bulk lines, and a low-density general freight network comprised of core and branch lines. While the bulk export lines operate at world-class standard costs with very high densities, the general freight network operates at substantially lower densities, as **Figure 68** documents. While some core lines achieve density close to the bulk lines, even the highest volume branch line operates at only 6 gross ton kilometers per kilometer.

Figure 68: The Rail Freight Network — Densities



Source: Spoornet, MSA Analysis

Given the existing consolidation already occurring on the rail network, the strategy can further decrease system costs by establishing the core lines and branch lines with separate cost structures, perhaps as separate entities. This would require a series of actions to accomplish, but would result in an additional almost 2 cents/NTK for core customers. Actions for the potential core lines include:

- Separate the financial operations of the special bulk export lines from the general freight network
- Determine which general freight lines should be core lines, for example the high density lines, those that connect major centres, and main feeder lines
- Curtail investment in all of the non-core lines

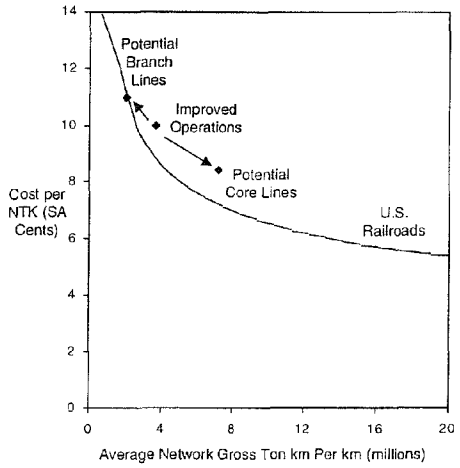
Actions for the potential branch lines require a separate set of options, including:

- Assess the market potential for each branch line
- Sell lines that could be profitable to short line operators

- Operate branch lines independently under a lower fixed cost structure
- Run marginal lines until assets are depleted
- Restructure, or limit the negative impact of clearly non-viable lines

Figure 69 illustrates the systems cost results of such a potential split.

Figure 69: Rail Costs Based on Density



Note: Assumes closing 75% of the performance gap
Source: Spoornet, U.S. Railroad Annual Reports, MSA estimates and analysis

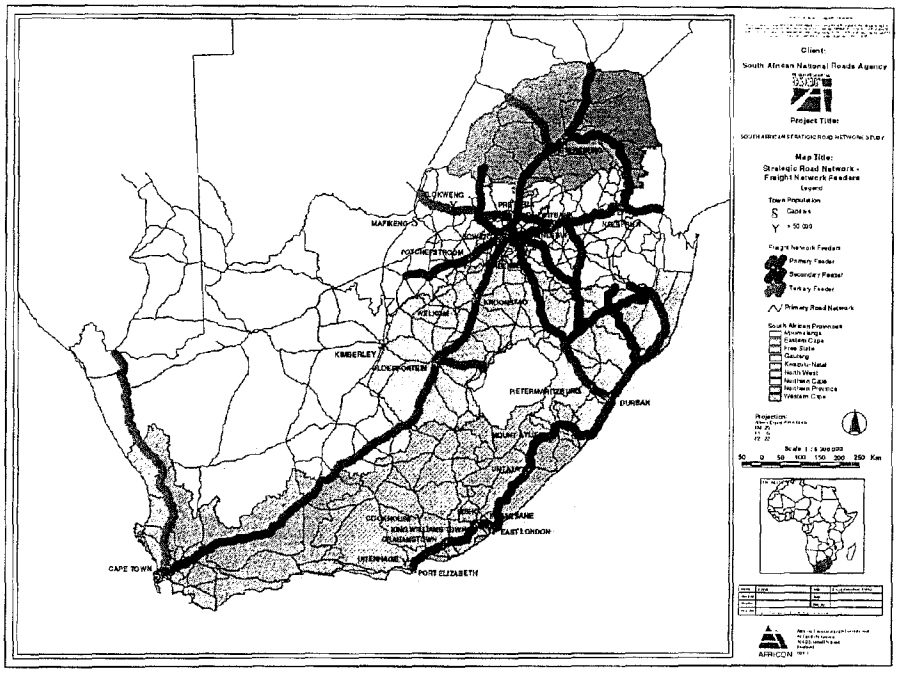
This shift would result in a loss of volume to the core rail lines, but only a modest amount, as branch traffic that terminates or passes over the core network may still use it. Some of the traffic will move to road freight, and a portion of that would be expected to be trucked to a railhead, in a process parallel to short line operators feeding traffic to the core network. Such a shift to intermodal or short line-core line transfers would positively affect not just the systems cost, but the system reliability. Currently, less-than-unit trains are the least reliable trains, and a shift to a core network would reduce the proportion of these trains on the network by over 10%. In general, the shift to a focused core network would also increase reliability by reducing the complexity of network operations and focusing the investment in newer rolling stock, signaling systems, and other productivity enhancing measures.

Managing Road Freight Systems

The road network is similar to the rail network, insofar as only a small proportion of total network kilometers has significant volume and strategic importance. As in rail, this enables the limited investment funds available to

be concentrated in a focused, high-density network. **Figure 70** indicates which roads constitute the strategic road network for freight.

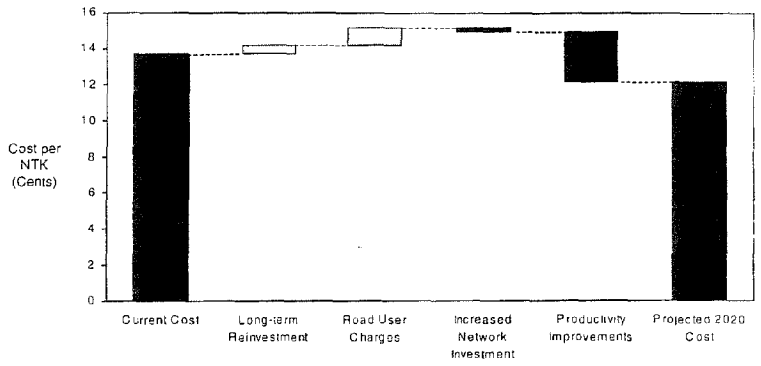
Figure 70: The Road Freight Network in South Africa



This network is already operating at high density levels, and future investment should focus on improving and maintaining this portion of the network and the key feeders into it.

System costs can also be lowered by improving operating efficiencies. Although some elements of the strategy will result in a short-term rise in road freight costs, in the longer term those costs will decrease as the network improves and productivity increases. In particular, three parts of the strategy – designed to shore up system sustainability – will likely raise road freight operating costs in the near term: long-term reinvestment requirements, road user charges, and externality internalisation charges. However, as vehicles and roads improve, many operating costs will improve. **Figure 71** illustrates the heavy vehicle operations 'balance sheet' of proposed changes and their cost impact.

Figure 71: Changes to Heavy Vehicle Operating Cost



Note: Assumes 7-Axle vehicle
Source: RFA, MSA analysis

Modal Balance and Roles

One of the benefits of reducing system costs will be the restoration of value-based competition between rail and road. In international settings, long-haul rail costs generally average below 70% of those of road, whereas currently in South Africa rail and road freight have similar costs. MSA forecasts that by 2020, with the changes contemplated, South Africa will approach international levels.[23] The result of this changing cost relativity will be a likely shift in share from road freight back to rail for long-distance corridors, and from rail to road freight on shorter feeder routes, leading to a much more sustainable balance.

Thus, MSA envisions a future land transport environment in which there is high density demand on a few corridors, fed by substantial feeder volume. Road freight costs will rise in the near term due to better enforcement, road user charges, and reinvestment requirements, but productivity will reduce these costs over time to levels below where they currently sit. Competition between road and rail on main corridors will intensify, with some share likely to shift to rail. However, road freight will predominate on lower volume lines where a high variable cost is more appropriate, feeding into both rail and road long-haul operations. This, in turn, will raise demand for more efficient intermodal transfers, and the general competition will create higher demand for increased rail savings to customers.

[23] Assuming long-haul road freight with road user charges, long term reinvestment, and a 20% decrease in road freight costs over time at the same GVM.

Inland Terminals - City Deep

Inland terminals provide the essential intermodal link between the road and rail freight systems. Specifically, these terminals act as inland ports for container traffic, transferring imported containers from trains onto road vehicles near their inland destinations, and transferring export containers from road vehicles onto trains destined for the port. Whilst there are numerous inland terminals in South Africa, the most important is City Deep, located just south of Johannesburg.

City Deep was planned specifically for containerisation, in 1977. The site was chosen on the basis of its central location, close to the industrial areas of Johannesburg and the Witwatersrand. That advantage has now eroded with companies relocating to sites distant from the Johannesburg CBD. The facility was originally designed to deal primarily with import/export cargo, but it now deals with domestic cargo as well. Also, the terminal is not configured to handle "super-links" - vehicles that are used for long haul trips.

There are several firm-level, operational problems that prevent the optimisation of the system:

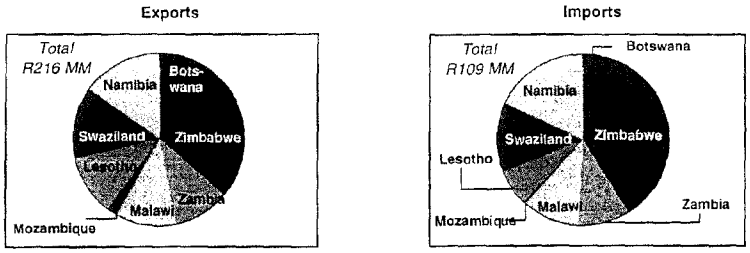
- Vehicles arrive randomly, resulting in bunching;
- Customers are unable to receive containers which then have to be stored and delivered at a later stage;
- Incomplete documentation and insufficient EDI to eliminate excessive paperwork;
- Lack of integration between the systems of the different role-players.

Improving the firm-level performance of the inland terminals is critical to the successful implementation of the strategy. Measures such as the introduction of competition or concessioning should be considered if the current operator is unable to make the necessary improvements.

SADC Freight Transport

The imperative for reduced system costs applies to SADC, especially given the cost premia faced by shippers into neighbouring countries described in **Figure 72**.

Figure 72: SADC Trade Balance — Cost Premia



Many initiatives are currently underway to relieve the situation, particularly with respect to operating efficiencies at border crossings, but three additional steps are required to integrate SADC into the vision.

- Agree on which corridors should be designated and what density volumes are expected and required
- Infrastructure investment must then be focused, across all countries, along the selected corridors, to prevent dilution of the required densities.
- Invest in connecting terminals, logistics, and inter-modal facilities to decrease delays and improve system integration

Improved Service: Vision for Tailored Systems

In addition to the corridor vision, the strategy must also emphasise the ability of customers to develop, in conjunction with providers, tailored systems like the current Coal Link operation through Richards Bay. By creating tailored transport systems dedicated for one or several customers, South Africa can increase the competitiveness of its firms globally. Where possible, the transport system should aim to create these premium systems for customers with needs that are highly differentiated, either on the basis of geography, scale, or service. Doing so gives an important set of customers an increased level of choice for its service/cost trade-off decisions.

The strategy can enable the transport sector to provide these tailored systems through five sets of activities:

1. Building an industry structure which drives the system to innovate and upgrade. In other words, the customers of transport themselves must be demanding of the system.
2. Decreasing the fixed costs in the system to enhance flexibility, responsiveness, and greater ability to adapt to changing needs of shippers

3. Restoring price and value signals in the system to encourage customers to pay the full value of the differentiated service, thereby providing sufficient returns for the system to invest and reinvest behind the customer's needs
4. Improving customer bargaining power, since many industrial customers lack sufficient clout to achieve their goals of the transport system, regardless of how demanding they are
5. Building the strength of the entire industry, particularly in financing, logistics, and skills. Provision of training, information technology literacy, and effective financial institutions become essential to create the skill base required for an industry to be responsive to differentiated customers.

Although all customers will naturally wish to have dedicated facilities, few segments will be able to afford them. To ensure that the system does not uneconomically produce dedicated assets for customers, the tailored systems should adhere to a principle of customers bearing full costs. In addition, the resulting systems must be insulated from the rest of the system to ensure that others are not obligated to subsidise one customer's system. Conversely, however, the transport sector must make it easier to create tailored systems. To make custom, dedicated solutions more affordable in the longer term, the system must:

1. Actively fund and service emerging large segments with tailored systems
2. Find means of reducing scale requirements through technology, joint purchasing, etc.
3. Create flexibility within existing systems that already serve multiple segments to meet tailored needs of each segment better over time
4. Ringfence systems and ensure that customers pay the lifetime operating and capital costs, receiving differentiated services in exchange

Summary: The Corridor Vision for 2020

In the long run, the freight transport system for general cargo needs to move toward a corridor vision in order to meet customer needs, driven by global trends and modal economics. This concentration around corridors is increasingly a *de facto* occurrence in the system, but the strategy must make this explicit and focus investment around it. The vision encompasses:

- *A limited number of highly developed multimodal transportation corridors* between domestic centres and international origins and destinations. These corridors should connect and improve service levels for the majority of high volume customers;

  - The strategy would continue to support major bulk and breakbulk corridors, but must have an internal economic logic that enables them to be self-funding:
  - International container traffic would shift to the more 'natural' side of the country, e.g. traffic for the Americas via a west-facing port.

- *Corridors must be connected to a limited number of highly specialised ports.*
  - Two ports to focus on international container traffic;
  - Other ports can become focused on bulk, breakbulk, or feeder and specialty container ports. If necessary, ports could be rationalised.

- *Lower density route lines would feed traffic into main corridors and nodes*, leaving road freight and medium density short line railroads to feed and distribute traffic in and out of rail core lines and core road freight routes.

- *Transfers between modes must operate far more efficiently than they do today,* particularly from ocean to inland transport (at the ports) and between road and rail (at inland terminals) .

Potential Benefits of the Corridor Vision

The corridor vision should yield significant benefits for customers, providers, and national objectives. These benefits can then be directed towards the various stakeholders in the system, ranging from providers (in the form of profitability, labour wages and training, or reinvestment capital) to customers (in the form of lower prices or better service for the same price). The creation of a social plan funded by these savings could offset some of the negative impacts of the strategy on other stakeholders. The government can also benefit indirectly from increased tax revenue generated by higher levels of economic activity, or directly from capturing some of the benefits to pay for other national objectives or reinvest in needed infrastructure. The table in **Figure 73** details the breakdown of benefits.

Figure 73: Benefits of the Corridor Vision

	Maritime	Inland
Build Density Around Corridors	• Trade flow balancing raises prices by 18 to 25% from 2004 • Reduction in multiple port calls: 2 to 11% savings in cost and transit time	• Separation of core rail lines from branch lines reduces core line costs by 15% • Investment in corridor freight network reduces vehicle operating costs
Appropriate Use of Modes and Modal Economies of Scale	• Increase vessel size decreases vessel cost by 17% • Feeder and specialised ports save from 3 to 5 days in transit time	• Increased use of unit trains improves service reliability • Road user charges for infrastructure and externalities increase 0.5 to 1 cent per NTK
Improve Firm-Level Performance	• Port investment, fixed vessel arrivals and operating efficiencies eliminate excess port delays	• Rail operational improvements reduce general freight costs by 25% • Road freight productivity improvements reduce costs by 20% • Inland terminal improvements improve service reliability and reduce road freight costs

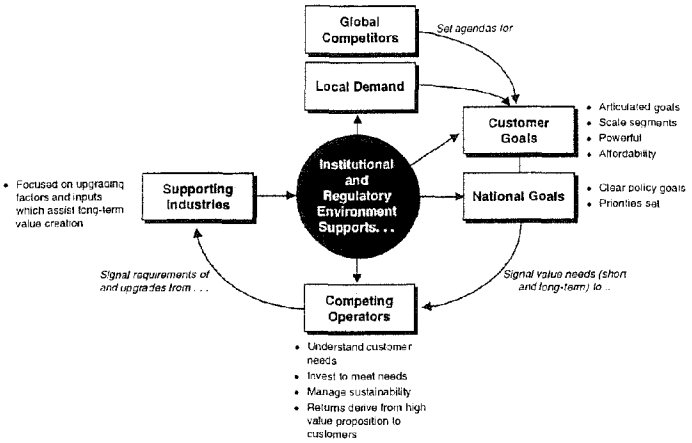
Freight Strategy: Actions Required

Restoring Alignment to the System

To implement the vision, a series of actions will be required at every level of the transport sector. In addition to achieving the corridor vision, enabling the creation of tailored systems, and improving levels of service, the strategy must restore alignment to the system. The situational analysis found that the system was not aligned in significant ways, and that feedback mechanisms inherent in the system were either blocked or absent altogether. If the system and all of the actors in it are not aligned, then the strategy cannot succeed.

Furthermore, system alignment is the critical foundation upon which the strategy can become self-adjusting; only a sector that is signaling value properly and signaling requirements accurately can adjust with the evolution of the economy and the national objectives. **Figure 74** describes how an aligned system should operate, with strong component parts and an ability to clearly signal the behaviours required to upgrade.

Figure 74: Creating an Aligned System



Strategic Actions and Tactical Choices

Two levels of action will be required to implement the vision and realise the benefits: strategic actions and tactical choices.

Strategic actions deliver on basic strategic choices which are a necessary consequence of the strategy, and the focus of *Moving South Africa*. They derive from an articulated and agreed set of strategic thrusts, and are chosen for their necessary impact against the strategic thrusts. They are actions at a high level that must be taken to improve reliability and transit times, and lower systems costs. Examples of these kinds of actions include densification of corridors and port pricing structures.

Tactical choices, in contrast, cover a wider range of next-tier actions about how to implement the strategy, and are negotiable. These choices will be driven by a host of constituency needs, rather than by MSA recommendations. For instance, there are various ways to encourage innovation, or to consolidate to two core container ports. Tactical choices can be informed by case study, but often little 'objective' proof exists to validate one choice over another. Many choices will derive from various participants' mental models of change, and the strategy is indifferent to the choices made as long as they achieve the vision and are consistent with the strategic actions. Examples of tactical choices include issues of regulatory requirements and ownership structures, which, in the view of MSA, are outputs of other upstream strategy decisions.

Thus, *the focus of the action agenda for MSA is strictly on the required strategic actions*. To the extent that the strategy discusses tactical choices, it

lays out the range of potential options but explicitly does not choose amongst them.

Within the realm of strategic actions, however, MSA has identified five kinds of strategic action that will be required. They encompass:

- Actions across the system:
  - To build system density
  - To align the system and its players

- Actions within each of the system's parts
  - To realise economies of scale
  - To improve operating efficiencies at the firm level
  - To improve service levels

Some of these actions will assist with the unwind agenda, addressing the legacy of the apartheid transport system. Examples here include addressing wharfage charges and eliminating SADC transport barriers. Other actions will contribute to the creation of the basic transport platform, such as improving operating efficiencies in ports and rail, or enforcement of overloading regulations. Finally, some actions will contribute to creating advantage through differentiation and creation of tailored systems of the kind described above.

All of these actions should be directed towards achieving the primary strategic thrust in each mode. **Figure 75** summarises the strategic thrusts by mode:

Figure 75: Strategic Thrusts by Mode

	Primary Strategic Thrust		
	Density	Scale	Operating Efficiency
Ocean Freight	✔	✔	
Ports		✔	✔
Rail Freight	✔	✔	✔
Road Freight		✔	

Strategic Actions Across the System

Five sets of strategic actions, to be taken at a system level, are designed to build the system density and create alignment amongst all the participants in the sector in all modes:

- Make transparent the national objectives
- Align industrial strategy and freight strategy
- Focus large infrastructure developments
- Create customer-facing systems
- Manage differentiation

1. Make Transparent Non-transport National Objectives

The system should first be aligned to its core mission, providing low cost, highly reliable service with low transit times. After this point the system can then be targeted to serve additional non-transport national priorities. To enable this to happen without detracting from the basic value proposition of the transport system to its customers, such targeting should be:

- Focused on the national objective in a transparent, explicit fashion
- Managed in a manner that does not dilute the signals of value and innovation in the system, nor hamper the implementation of the core strategy. The pursuit of national objectives should not, for instance, re-introduce distorted pricing that reflects true cost plus other social objectives mixed in. Such 'social pricing' should be clear and transparent
- Funded by the 'customer' ministry if not wholly, at least in part, with the source of funds matching the application to which it is put. Simply put, if a ministry or department needs the transport system to perform a non-core function, then responsibility for funding it should fall outside the transport system
- Time-specific, in line with the expected timeline for achieving the objective. The government should not place open-ended, un-measurable requirements on the system.
- Monitored and reviewed regularly. The transport system's accomplishment of non-core objectives should be subjected to the same regular review and scrutiny that its core performance will be.

2. Align industrial and transport strategies

To ensure that the freight system meets the needs of its principal customers, transport and trade strategies need to be more closely integrated. In particular, two key principles must be in place to harmonise the strategies:

- Limit new corridor developments that dilute general cargo densities. This step is critical to preventing diminution of general cargo densities and the attendant rise in costs. Such a stricture does not, however, discourage the development of new corridors. Rather, it suggests that if a corridor develops, create one of sufficient scale that it creates standalone economies, or one that does not rely on the general cargo system (but could be bulk or breakbulk instead). New corridors, therefore, should either be able to 'stand on their own economics', or should be folded into the existing corridors

- Focus location around designated corridors and the nodes at either end. This step, especially for manufacturers using the general cargo system, will benefit both existing and new industrial customers of the system by increasing the density on given shipping routes. Although these location decisions are generally made outside the sphere of transport's influence, they are essential in delivering transport value to shippers.

3. Focus large infrastructure developments

Large infrastructure developments are key system drivers because of the high fixed costs involved, their long-term impact in determining the overall level of cost in the system, and their semi-permanence as spatially dependent real assets. As such:

- Large infrastructural decisions need to be aligned to the strategy, focusing investments around the corridors and principal nodes. Conversely, investors must de-emphasise non-core investments.

- Large infrastructural decisions need to be controlled within each mode at a national level, and the current system is configured for doing this.

- Large infrastructural decisions need to be coordinated among modes, especially within a corridor. Otherwise, the benefits of density will be squandered. This coordination is currently not occurring.

- Levels of investment in key infrastructure should meet future requirements. Current infrastructure spending is well below needed levels. New financing and expenditure strategies will be required to lower the cost of future requirements.

As a consequence of this portion of the strategic actions, infrastructure 'agencies' will need to be able to collaborate to control and direct large infrastructure developments which could have system effects. Unfortunately, no such coordinating mechanism exists today. There is currently no structure to coordinate the investment portfolio, as **Figure 76** demonstrates, nor are there incentives or responsibility for tough decisions to disinvest. Similarly, there is no mechanism to align provincial spending, nor to align modal spending at any level.

Figure 76: Infrastructure Co-ordination and Regulation

Mode	Regulation	Infrastructure
Ocean Freight	• IMO and ISM code compliance inspected by SAMSA	• N/A
Ports	• Self regulation by Portnet • MSA requirements for safety of buoys, tugs, lights inspected by SAMSA	• Decided by Portnet and Transnet
Rail Freight	• Self regulation by Spoornet	• Decided by Spoornet and Transnet
Road Freight	• Regulated under RTQS and road • Traffic Act Cross border regulation by CBPA	• NRA: national roads • Provinces: provincial • Local Authorities: urban / local
Air Freight	• Domestic unregulated DASLC licenses • International regulated by CAA in terms of bilateral agreements – IASC licenses • Safety monitored by CAA to ICAO standards	• Airports company • Regulatory Committee • DoT
Airports	• Regulated by Regulating Committee	

4. Create customer-facing systems

Very little of the transport system is oriented around customers; rather, the emphasis has historically been on modal organisation. While efforts are underway in the sector to reorient around customer needs, more is needed. The full range of required strategic actions includes:

- Charge customers the full costs of the entire transport system used, including operations, infrastructure, and externalities.[24] Only full cost charging will create the proper signaling of value and encourage rational decision-making at the firm level, and rational use of resources. Moreover, it ensures sustainability.

- Create stand-alone financing, and match sources and applications of funds. This ensures sustainability by allowing customers to pay

[24] This may even include the cost of enforcement

for the value they can support. if the application of funds is exclusively applied to the customer segment which benefits. One salient example of this principle is the funding of the coal rail corridor for operations and infrastructure that benefit coal customers. Another example is the matching of durations, so that short-term funds like annual allocations from the fiscus support short term operations like enforcement. The principle of stand-alone funding also implies that shared infrastructure must be split proportionately to assign appropriate costs to different segments of users.

This principle operates in sharp contrast to the current situation, where cross-funding in Transnet creates capital expenditure shortfalls and rewards some customer segments over others. For example, Portnet wharfage charges penalise high-value-added segments, but generate 62% of Transnet profits. Long-term capital requirements at the ports, however, are currently 65% underfunded.

- Pricing mechanisms to signal value in accurate and transparent fashion. Prices must reflect the cost of a service being delivered to the end customer segment, without including costs of other benefits to other customers.

- Reinvest profits into customer-based infrastructure to meet future needs. Once funds have been ringfenced and density and scale have been achieved, more funding will flow to providers. These profits should be reinvested in systems that continue to create and upgrade value for the customers who are now funding the profitability.

- If profits from one segment are to be used to invest in other segments, do so transparently.

Figure 77 below describes the implication of these actions for each relevant freight mode:

Figure 77: Pricing Principles by Mode

Rail Freight	Road Freight	Ports
Unbundle costs across customer groups to the extent possible	Bundle all costs together • Operations • Infrastructure • Externalities	Eliminate price discrimination across customers • Cargo types • Individual ports • Imports / exports

5. Manage differentiation

While it is the objective of the transport system to meet the needs of all customer segments, the different needs of distinctive sub-segments can only be met if:

- The sub-segment pays the full costs of meeting its needs, as described in the tailored systems discussion;
- Meeting the sub-segment's needs does not compromise the economics of the 'backbone' in the main corridors and ports;
- Any inefficiencies in scale (such as sub-scale ports or under-utilised roads) are fully absorbed by the segment served and are not subsidised by other parts of the system, either explicitly or through the dilution of existing corridor densities;
- The risk involved in infrastructure development is borne entirely by ring-fenced operators and for the customer segment, with no recourse to fiscal support or support from elsewhere in the freight system.

The objective of these strategic actions is to preserve the integrity of the corridor system, while actively encouraging customers to seek differentiated solutions which meet their needs more precisely.

Mode-Specific Actions and Choices

At a modal level, the system-wide actions translate into very specific strategic actions, and a set of corresponding tactical choices.

Strategic Actions in Port Infrastructure and Operations
Several key strategic actions emerge in the realm of ports in order to realise the vision of low cost, high reliability, short transit time service in the corridors and on the maritime leg of general cargo import and export. The key steps revolve around promoting the consolidation of higher volumes of container traffic into fewer ports. The highlights of these actions encompass the following:

- *Identify which ports are to be the core international container export/import ports of the future.* Also, decide which ports, if any, will serve as feeder ports to the core container ports. This process should be an inclusive one of consultation with ship lines, customers, existing port operators, and other entities co-ordinating ports with the connecting modal infrastructure in the remainder of the corridor.

- *Remove the capacity constraints in the port system and direct infrastructure investments in line with the strategy.* This step encompasses several subsidiary actions, including:
  - In the short-term, address the causes of vessel delays in Durban;
  - Undertake a long-term capacity exercise, or revise existing capacity planning in light of the new strategy. Currently, both Durban and Cape Town ports are forecast to experience capacity constraints, but decisions about consolidation will determine the impact of such constraints;
  - Invest in the expansion of the selected core ports;
  - Reduce spending in the non-core or feeder ports to basic requirement levels. It is important to keep feeder ports operating smoothly, if they are economically viable, since they form a key link into the core ports. However, capital spending priorities should begin with the core ports;
  - Stop spending on non-viable ports. Continued investment here will dilute the effectiveness of the rest of the port system.

- *Focus the role of ports.* Allowing ports to be self-sustaining on the basis of their own economics is critical to the ability to upgrade assets and service levels, particularly in entities as capital intensive as ports. The strategy requires three types of focus: among cargo types, among ports, and among origins and destinations.

  At a more detailed level, proper signaling can be restored by:
  - Retaining capital for reinvestment within the port
  - Pricing to customers based on operating and capital cost recovery
  - Focusing roles of individual ports by determining which will be core 'east-west' ports, which will be feeders, and which will serve differentiated needs of particular customer segments. The focusing is especially important for containerised general cargo ports.

- *Co-ordinate the ports system and integrate it with other modes.* This action requires both institutional reorganisation and changes in the accompanying regulatory environment. The next step is to consider what institutional form such co-ordination might take.

  In all instances, an independent port regulator appears necessary. The key role of the regulator would be to manage the rates of return to the natural monopoly of port infrastructure.

In addition, one possible choice is for ownership to vest in a national port authority (NPA), which would ensure that a number of objectives are more easily and effectively accomplished. In particular, an NPA would allow the co-ordination and control of large infrastructure investments, preventing the squandering of scarce capital for sub-scale operations. Second, an NPA would allow for a co-ordinated level of control of terminals which could be either concessioned or opened to competition. And third, an NPA could ensure that terminals respond not just to customer needs but to national objectives.

- *Improve operational efficiencies.* The responsibility for this falls predominantly to the firms operating in the port environment.

Tactical Choices in Port Infrastructure and Operations

Once the strategic actions have been implemented, the port sector will face a series of choices about which tactics to employ at the firm level to accomplish the vision. There will be a series of tactical choices to make, including:

- What level of economic return to allow;
- How to create operating efficiencies at the firm level;
- Allowing competition within the ports;
- Level of concessioning, if any, of the terminal operations;
- What ownership structures are most appropriate for the ports, and what combinations of assets should owners be permitted to hold.

The strategy does not offer a position on these purely tactical issues. These must be addressed institutionally once the strategy has put into place the basic framework in which signals are flowing and blockages are removed from the system.

Strategic Actions in Rail Infrastructure and Operations

The vision requires four key strategic actions to occur together in the rail system in order to restore proper signaling and customer value to the network:

- *Focus investments in the corridors.* Expend the limited available capital in upgrading the key corridors which carry the majority of the volumes, to assist the current densification trends and preserve economies of scale. This imperative has differing consequences for the sub-parts of the rail network, principally:
  - Sell, concession, or abandon low density branch lines, depending on their volumes, densities, current condition, and economic viability;

  - Increase the use of unit trains and super-unit trains along the core network.

- *Remove barriers to attaining cost efficiencies,* especially if there are embedded national objectives that are not transparent which are raising costs in the system - for example, the desire to provide service sub-scale farming communities or retain higher than necessary levels of employment. Each of these choices drives up systems cost to all customers and, in conformance to the general approach of the strategy, should be separately funded mandates, rather than non-transparent costs to all.

- *Invest in operational efficiencies,* in particular through accelerated investment in capital equipment like signaling systems, locomotives, and rolling stock. Funds spent here will improve operating costs and performance substantially, and can be generated from a stand-alone core network that is financially self-sustaining.

- *Ring-fence separable services and customer groups.* The main rail business units should be ring-fenced financially along the lines of their customers, to ensure that each receives the level of funding that is required and economically justified.

  In addition to ring-fencing the capital investment, the strategy requires that savings from operating efficiencies flow back into the business units that generated them, and ultimately to customers of the system.

Tactical Choices in Rail Infrastructure and Operations

As in ports, the rail sector will need to act on multiple tactical decisions once the principal strategic actions have pointed the industry in the direction of upgrading and clear signaling. There are many possible choices to be made, including:

- Whether to sell, concession, or abandon branch lines that are not a part of the core network;
- Determining the specific investment backlog needs, whether in rolling stock, infrastructure, information technology, terminals, or other facilities;
- Choosing the level of desired competition in the system and the form it takes, e.g. setting rules for network access;
- Deciding the appropriate ownership structures and guidelines about the combinations of assets an owner can hold;

- What form and degree of economic regulation to impose on the system to ensure that the vision is being accomplished.

MSA is indifferent about which tactical choices prevail. The strategic requirement is that such choices remain consistent with the vision and the strategic actions, and can be co-ordinated and integrated across modes in the service of distinct customer needs.

Strategic Actions in Road Freight Infrastructure and Operations

Although the road network generates relatively little customer dissatisfaction at the moment, it is important to address the deterioration of the overall quality of the network and the funding shortfalls. Thus, the focus on road – as in the rest of the freight system – is on consolidation and building densities through focusing investment. Four strategic actions become important to realising the vision:

- *Define the freight network.* To a large extent, the current flows already have defined the skeleton of such a strategic freight network, but this task must be done more comprehensively and through a consultative process with road hauliers, the National Roads Agency, provinces, and other infrastructure providers. The paramount consideration in the definition task is the selection of freight corridors. Once these are determined, the rest of the identification task follows.

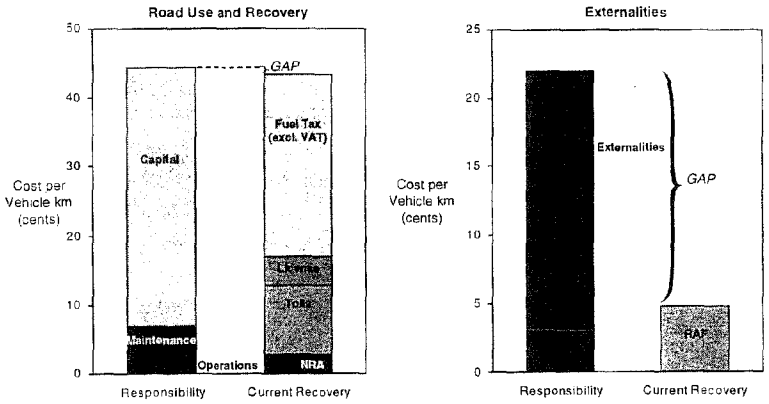
- *Manage road infrastructure investment.* Consistent with the definition of a strategic freight road network, the resulting investment patterns should differentiate the level of spending depending on the type of road. In particular:
  - Increase funding to the corridors to maintain a higher standard and improve operating efficiencies of hauliers along these routes;
  - Increase the level of overall funding to the road network, which has been suffering from continuing gradual disinvestment over time. Reversing the trend early lowers funding requirements in maintenance and repair later;
  - Reduce performance requirements for branch/ feeder roads, and fund accordingly. Roads that are not directly part of the strategic freight network must be maintained to a reasonable quality level, but not to the same standard as the core network, and funding should reflect this priority.

- *Charge road hauliers for road use and externalities.* Full costing of the infrastructure and externalities are necessary to restore economic value signaling and creating the proper modal balances

in land transport. Full costing will ensure long-term sustainability, and reduce the negative effects of externalities in a self-financing fashion. Over the twenty year horizon of the strategy, a variety of technical improvements should create a range of options for different ways to charge for road use. In the shorter term, however, the actions require:

- Determining the role of the fuel tax. If the fuel tax is a user charge, then the system is almost recovering infrastructure costs already and then only externality costs need to be charged through to hauliers, as indicated in **Figure 78**. However, if the fuel tax is considered to be simply a general tax, then the system is not recovering enough for road use. From this decision, funds should be allocated accordingly back to road construction and maintenance, or safety and environmental uses.

Figure 78: Road Use and Recovery



Note: Uses MSA estimate of externalities. LTPS estimates externalities gap to be 1¢ / per vehicle km
Source: LTPS, MSA analysis

- Allocating responsibility for externality costs, especially safety and emissions. The transport sector needs a more detailed understanding of the components of externalities and, more importantly, their cost basis and the responsibility levels of various users. Current estimates are vague and based on analogues to European studies, and are insufficiently precise in the South African context. A detailed South African study on road externality costs must therefore begin. Following the study, the costs must be prioritised and allocated accordingly through pricing mechanisms.

- *Enforce limits on gross vehicle mass (GVM).* Failure to enforce limits on GVM and other road safety standards contributes to the

distortion of value signaling in the system, by effectively underpricing road usage. Creating more vigilant enforcement is a key means of enhancing the financial self-sufficiency of the road network.

Accomplishing these four actions in the road context will be more difficult than in the ports or rail context, given the large number of participants with an interest in the system. The co-ordination task among provinces, national government, local government and private industry emerges as a critical success factor to manage, and this issue is addressed in greater detail in the cross-cutting issues section of the strategy recommendations.

Tactical Choices in Road Infrastructure and Operations

The required tactical decisions pertaining to the road system center on financing, understanding costs, and co-ordinating delivery. More specifically, they are choices about:

- Defining the role of the fuel tax and other user charging mechanisms, and the degree to which they directly support the road network or support it indirectly through the fiscus;
- Determining the general financial structure which supports the road system beyond the fuel tax, integrating funds from national and provincial levels in support of the strategy;
- Calculating the specific causes and costs of road-based externalities;
- Considering the possibility of raising GVM limits on some corridors. This measure would improve the operating economics and provide operators with an incentive to comply with limits nationally;[25]
- Most importantly, establishing an institutional structure that integrates funding, regulatory decisions, and decision rights with the strategic prioritisation of corridors across all levels of government.

[25] Before taking this action, a number of other elements of the system would need to be in place, including adequate enforcement, appropriate charging mechanisms for road use, integrated and co-ordinated systems to prosecute and punish violators, etc. This option is proposed as a potential incentive to consider, but only once the rest of the system is aligned.

10. STRATEGY RECOMMENDATIONS: URBAN CUSTOMERS

Executive Summary

Much more than the freight system, the urban transport system (or series of urban transport networks in cities across the country) is a product of the apartheid legacy. Distorted spatial planning formed the underpinning of the apartheid strategy for most aspects of society, so it is not surprising that the urban – and rural – systems encounter this problem most profoundly. As a result, the overriding task in urban is much more one of unwinding the legacy than almost anywhere else in the transport sector. Because the legacy has powerful momentum based on land related based fixed asset decisions of generations, it is complex and difficult to correct.

As shown in the situation analysis, the present urban transport system is failing its customers and the nation. There are four significant strategic challenges facing the current system:

- Lack of affordable basic access for the 2.8 million Stranded passengers;
- Ineffective public transport with high journey times and high costs;
- Increasing car dependence;
- Poor spatial planning

These problems arise as a direct result of the legacy of apartheid and transport platform underlying the old system that has proven to be largely ineffective. If no action is taken, the situation will become much worse, with almost every performance indicator dropping in the next 20 – 25 years. Without intervention, the drivers perpetuating the current poor performance will continue unabated, and the results will be

- Longer distances and travel times as the decentralisation of commercial areas and housing continues unabated;
- An almost 14% increase in the number of Stranded;
- A quantum increase in road congestion and the attendant externality costs;
- Deteriorating infrastructure and equipment, coupled with financial difficulties among operators and increasing burdens on the fiscus.

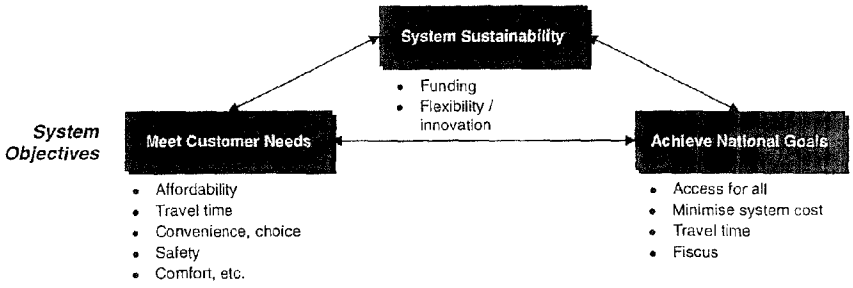
The *Moving South Africa* vision for urban transport is designed to enact the overall transport vision approved by Cabinet from the White Paper in the urban context. The vision states:

> *Provide an effective and sustainable urban transport system, planned and regulated through the lowest possible level of government, based*

on competition and largely private sector operation, which reduces system costs and improves customer service in order to meet customer and national objectives for user cost, travel times, choice, and safety.

Figure 79 describes the objectives of the vision.

Figure 79: Objectives of the Vision



To make the vision a reality, *Moving South Africa*'s strategy for urban transport focuses on three categories of strategic action. The first action is the **densification of transport corridors**. This requires the substantial reversal of apartheid land use planning to halt dispersion, but is essential – as it is in freight – to achieve needed economies of scope in the transport system. To accomplish this task, the strategy will need an aggressive mix of controls and incentives, and will require appropriately integrated coordination of the many institutions with a stake in the urban arena.

The second action works to **optimise modal economics and the service mix**. Investment in corridors is primarily roads-based, because densities of new corridors are unlikely to support new rail lines (existing dense corridors are already served by rail). In terms of service operation, the strategy is one of regulated competition, with integration of modes facilitated. Optimising modal economics requires addressing the use of road space, and the strategy proposes tough road space management to prioritise public transport. A principal lever of the recommended strategy is that of subsidies, which will be targeted at providing affordable access to the Stranded and subsidising the most economic mode on each corridor.

The third strategic action entails **improving firm-level performance**, a task which predominantly falls to private firms. Actions at the system level can improve the clarity of signaling and set the 'rules of the game' in a fashion that creates a platform to improve firm performance. In particular, the strategy requires effective regulation of all modes, especially taxis and the enforcement thereof. It emphasises tendering for subsidised routes and other forms of contract management, with built-in incentives for productivity

innovation and reinvestment. And this action raises sustainability of firms through increased capital investment.

The new strategy will significantly improve the performance of the system in meeting customer needs and national objectives. Customer goals for reduced cost, shorter journey times, increased choice, and improved safety will be met. The strategy will fulfill the national goals for basic access for all, and the urban transport system will be more sustainable and therefore capable of innovating to meet customer needs as they evolve.

However, implementing the strategy will be arduous and requires overcoming some significant obstacles. Changing the nature of land-use planning, road space management, planning and regulation, and subsidy targeting will need agreement on the objectives and strong political will. In addition, co-ordinating departments across national government and at all levels becomes a paramount, and extremely complex, task. For co-ordination to work in land use planning and transport regulation, government will need to improve its skilled resources and capabilities.

Some of these actions can begin in the short- to medium-term, but others – e.g. densifying corridors – will take 10 to 20 years to unwind the apartheid legacy and more recent dispersion trends. As such, the strategic actions must be coherent as a whole, with mutually reinforcing actions sustaining over time. In the long-run, benefits will accumulate and even greater benefits will accrue to the country when all of the actions are achieved

Current Government Initiatives

The NDOT has been aware of the legacy issues and the performance gaps in urban transport, and is currently taking a variety of actions to address the drivers of the problems either directly or indirectly. The major legacy issue is that of land use planning. The unwind agenda is already in motion, as the following table suggests.

Initiatives	Involved Institutions / Agencies	Objectives
Land Transport bill	National Department of Transport	• Promote a more efficient sustainable public transport system through regulated competition • Prioritise public over private transport
Formalise minibus / Taxi Operations	NDoT, Provincial DoTs, Registrars, LRTBs, Local governments	• Create a sustainable minibus taxi industry
Converting subsidised bus operations into a tendered contract system	NDoT Provincial DoTs and Tender Boards	• Reduce bus subsidies while improving operating costs and service to customers
Introduce regulated competition into commuter rail through concessioning contracts	NDoT, SARCC	• Reduce operating costs and subsidies while improving service levels

Performance Objectives

To achieve the vision, the system must be safe and secure across the board and meet the following specific performance requirements as set out in the White Paper (see **Figure 80**):

Figure 80: Performance Objectives for the Urban Passenger Transport System

	Measure	Target[1]	Current Gap[2]
Affordable	Commuter Fares	< 10% HDI	25%
Accessible	Walking Distance to Public Transport	< 15 minutes	4%
Reasonably Fast	Door to Door Journey Times	< 60 minutes	12%
Choice	Availability of Differentiated Modes / Level of Service	More than 1 Mode, where required	50%

[1] National transport objectives
[2] Average percentage of all customers for whom target is not met

Currently, the system is failing against most of these targets, though some targets, including walking distance and journey time are closer to accomplishment than others. Still, averages distort differences by segment, and on the key target of affordability, the system is failing one quarter of the urban population.

Thus, the performance objectives become:

- Increased public transport access and value to customers
  - Improving speed and service levels
  - Decreasing distance and, in some cases, costs
  - Lowering systems costs
  - Better safety levels from full externality pricing

- Increased profitability and sustainability in the industry
  - Increasing levels of reinvestment
  - Regulating competition to complement modal economics
  - Promoting output-based performance rather than price competition
  - Encouraging differentiated service offers to compete with cars
  - Discouraging car usage

- Internalised externality costs wherever possible

- More efficient use of resources
  - Improving targeting of funds for investment and operations
  - Raising the level of skilled capacity to integrate and coordinate the strategy

As with the freight strategy, accomplishing the performance objectives for urban passengers will require a coordinated set of actions, carefully sequenced and moving in concert. There are, once again, actions that must occur across the system as a whole, and actions that are specific to parts of the system.

An additional level of complexity arises in the urban context, because South Africa does not have one singular urban transport system, but rather a series of individual transport systems in urban areas, often with little relation to one another. Thus, some actions will apply only to certain Metros, while others will be relevant to almost all. As in freight, the strategy focuses primarily at the level of *strategic actions*, leaving the tactical choices to firms, local transport authorities, and other actors with implementation responsibility. However, in contrast to freight, many of the actions in the urban setting, particularly related to the key issue of land use, require a substantial amount of effort to unwind the apartheid legacy. Constraints of capital and human capacity will necessitate complex and localised decisions around time and staging of actions.

Urban Strategy: Strategic Actions

Three strategic actions are required to achieve the urban vision. The strategic actions are:

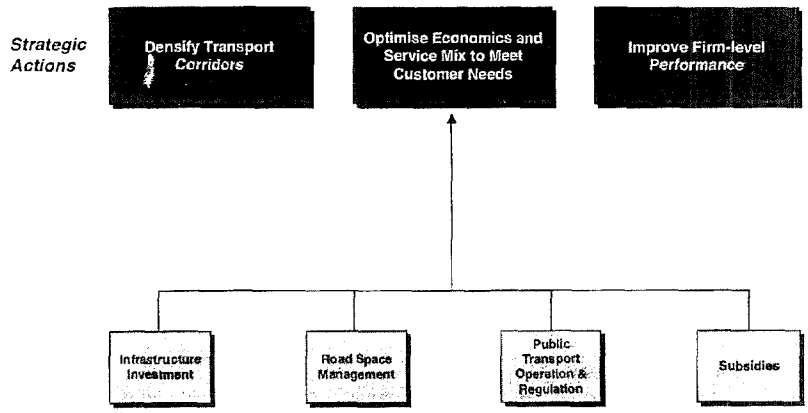
- *Densification of transport corridors* to achieve economies of scope through increased use of controls and incentives and provision of public transport investments to support corridor densification. This action is the linchpin of the urban strategy, creating a 'corridor vision' for urban areas across the country.
- *Optimising modal economics* (through economies of scale) *and service mix* to meet customer needs. In particular:
  - Focusing infrastructure investment on supporting corridor development, especially to improve roads and dedicated road-based public transport infrastructure like busways;
  - Reorienting planning and operation of public transport services to promote the mode that offers the best cost/service trade-off for a given corridor, and encourage differentiated public transport services, to meet higher level customer needs without subsidies or cross-subsidies;
  - Implementing tough road space management and car restrictions to improve the performance of public transport;

  - Targeting subsidies towards the poorer segments while encouraging use of the optimal mode and incentivising modal integration.

- *Improving firm-level performance and productivity*, by creating:
  - Competition within and between modes through tendering/ concessioning of services to private sector operators
  - Effective regulation of all modes, especially taxis, to meet customer needs, reduce system costs and create sustainability
  - Improved funding for infrastructure and upgrading to ensure sustainability

Each of the actions addresses several of the drivers (or levers) identified in the situational analysis as described in the diagram in **Figure 81**.

Figure 81: Urban Passenger Strategic Actions



Strategic Action: Densify Corridors

Whereas the freight system is already consolidating around a series of high-volume flows, accomplishing the same outcome in the urban setting will be substantially more difficult. To create meaningful transport corridors requires unwinding the land use legacy inherited from the past, and addressing the natural tendencies for land use dispersion that occur even without apartheid planning.

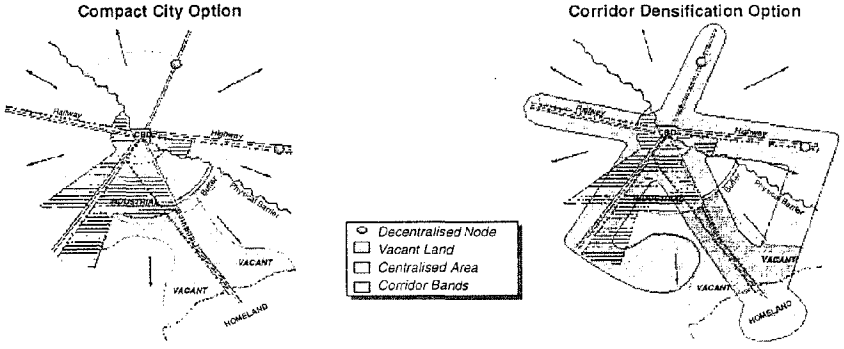
Land use patterns are the single greatest driver of the poor performance of the urban transport system in meeting customer needs, and so any solution will require either altering land tenure or working within its existing context. Distance, density, and employment location are all facets of land use that

affect the layout of South African cities and, subsequently, the economics and service levels of public transport.

As such, creating corridors and subsequently focusing investment and resources on these corridors emerges as the single most important component of the urban strategy. The transport benefits of corridor densification are substantial. 'Corridorisation' lowers overall system costs – not only for transport but for other infrastructure, too – and also enables lowers subsidies, raises travel speeds, and improves frequencies. It reintroduces rational economics into the system by reducing peaking, backhaul effects, and, importantly, complexity in operations. The improvement in economic fundamentals, in turn, creates the platform for improving safety and levels of service.

Corridorisation is only one option available to create density; for instance, another approach would create more compact cities in a tight radius around historical CBDs, as in Europe. High central city densities would enhance public transport use and sustainability, but in South Africa this solution is problematic due to historic land tenure patterns. The existing legacy has resulted in high density townships very distant (average 20 km) from the central area, and low density suburbs nearer the perimeter of the central area. And the tendency towards continuing decentralisation, especially of workplace locations, complicates even further the task of creating a 'compact city'. Some degree of 'compact city' may be achievable in some areas of some cities, and the *Moving South Africa* strategy does not rule out the option in some circumstances. However, the predominant pattern should be the corridor city. **Figure 82** illustrates a 'compact city' and a 'corridor city'.

Figure 82: Urban Densification Options



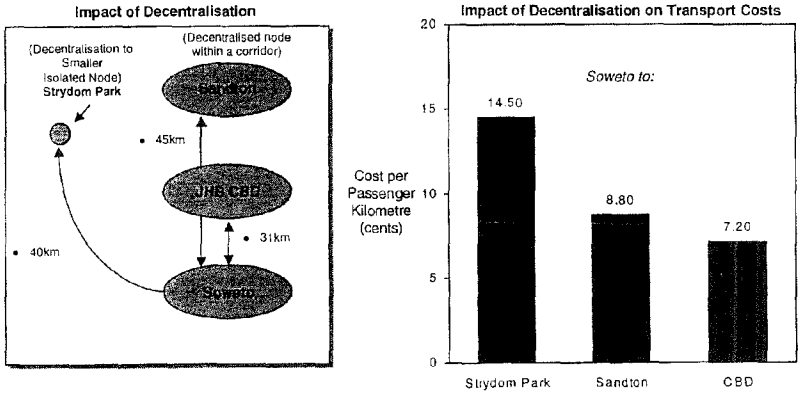
The corridor approach, in contrast, fits more easily with the existing South African urban land tenure patterns. Its appropriateness is driven not only by the decentralised distant townships and the low density inner-ring suburbs, but

also by a recognition of the decline in CBD vitality and the dispersion of development to satellite nodes. Moreover, this pattern recognises the existing swathes of vacant land occupying the space between most townships and suburban areas, and also builds on existing flows along major current corridors.

Corridors already exist to some extent in South African cities. Therefore, the strategy focuses on densification of existing corridors and creation of new corridors for major new developments. The focus of activity in the short-term, should be on reining in the centrifugal tendencies of location decisions. It is essential to prevent the further dispersion of development, and to create incentives for any decentralisation away from the CBD to occur within a corridor context.

To illustrate the economic logic of corridors, the cost of serving a decentralised, *isolated* low density node is almost 50% higher than serving a low density node located *on* a corridor. **Figure 83** illustrates the cost savings:

Figure 83: Negative Impact of Decentralisation on Transport Costs



As an illustration of the benefits of corridor densification, MSA analysed the potential benefits of densifying the Soshanguve corridor north of Pretoria. The effort would result in improved vehicle utilisation and a total net transport cost savings of R3 million per annum [26] (see **Figure 84**). This allows for 100% cost recovery and the elimination of subsidies. Additionally, densification on this corridor would lead to improved frequency and reliability of operations along the route.

[26] Cost savings derive from more consistent peaking, improved reverse ridership share close to the decentralised node, increased ridership turnovers, shorter average trip lengths spread over the full range of the corridor

Figure 84: Cost and Distance Savings: Soshanguve Corridor

	Average Travel Distance (km)	Total Corridor Cost p.a.	Total Corridor Revenues p.a.	Subsidy p.a.
Existing	17,22	R9,6 m	R6,8 m	R2,8M
Improved Land Use	13,50	R6,6 m	R6,6 m	—
Saving	3,72 km	R3,0 m	(R0,2 m)	R2,8M

The savings from the densification of the Soshanguve corridor are based on an aggressive strategy of creating intermediate commercial and employment nodes between Soshanguve and the Pretoria CBD, and building residential areas closer to the city centre. Cost savings derive from improved reverse ridership, shorter average trip length, less peaking of loads, and increased ridership turnover.

In some corridors, the ability to create intermediate commercial and employment nodes may be limited by the reluctance of businesses to move into locations far from major areas of demand, and with perceived poor facilities and lack of security. A more conservative scenario, based mainly on building new residential areas would yield approximately R1.2 million p.a. in savings.

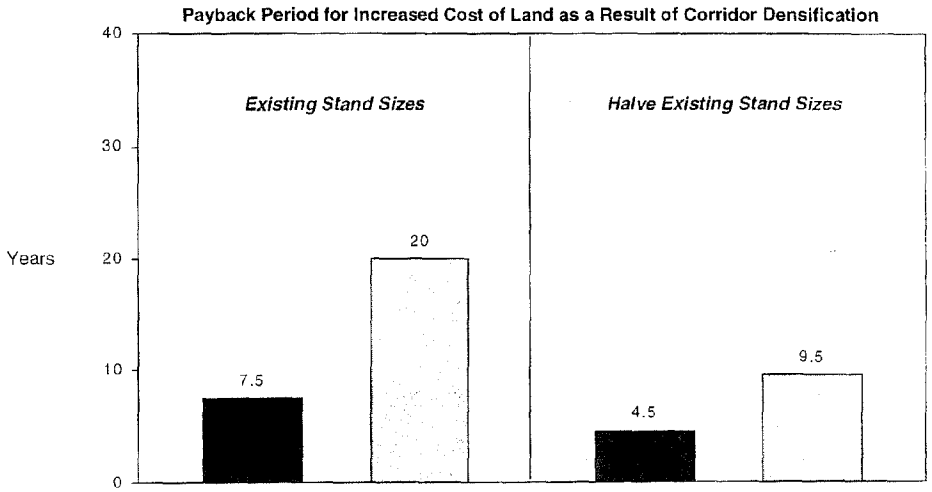
The major trade-off militating against the corridor densification strategy is the higher cost of land for new housing projects closer to the CBD. However, MSA analysis shows that transport and other utilities generate savings over time which compensate for the increased cost of land (see sidebar).

Optimising Land Use Around System Costs

Densification of land use generates significant savings for transport (and other utilities) compared to a more dispersed pattern. However, it also creates additional initial costs for housing in terms of higher land prices. At the moment these two conflicting elements are not being brought together to optimise systems costs. Housing targets are driving the need to build on cheap, available land, which is causing dispersion. Transport and other utilities have to be provided to serve these dispersed housing developments, bearing increased long-term costs.

Taking a total systems costs approach shows that densification pays. The additional cost of land can be recovered within seven to twenty years (depending on whether a more aggressive or more conservative densification scenario is followed). If existing stand sizes are halved, to further promote density, the pay-back period reduces to four to nine years (see figure below).

Transport accounts for around 40% of total utility costs, and represents around 65% of the savings. Therefore, while transport is important, other utilities also need to be coordinated as part of an integrated densification strategy.



The corridor vision will take 10-20 years to fully implement. Moreover, each corridor in the country will be different, as each must take into account unique local circumstances in their particular urban area, ranging from income levels to existing settlement patterns to open land availability. This will generate the need for high quality customer information in respect of each location, a specific needs-based segmentation, and a customised corridor strategy.

Because of the uniquely local nature of land use decisions, the most challenging part of implementing the corridor vision will be the co-ordination across and within government to overcome the obstacles. Some national policies, as in housing, encourage continued dispersion, based on the economics of land acquisition. These policies will need to be harmonised to fit into a paradigm that encompasses the systems cost of *all* community infrastructure, not just one component like housing or electricity. Creating the

context for this integration will require political will at all levels of government, but especially at the local level.
Land use controls and other mechanisms to introduce system level economic considerations (e.g. internalising transport and utility cost implications in development) create an additional danger: local governments may see an opportunity to compete for economic development and housing by being less strict on land use. The strategy and resulting tactical choices should strongly discourage this impulse, since it could derail the economic logic through a cycle of destructive competition.

The strategy recognises that many other obstacles exist to corridor densification, and to overcome these potential pitfalls will require strong co-operation across government. In particular, four different public entities will need to act in concert.

- *National Government* must provide the overall strategic vision for urban development, including transport. In doing so, it must also create a framework for absorbing systems costs and aligning the incentives for different national departments to follow the framework. Out of this activity will come guidelines for internalising systems costs within land developments.
- *Provincial Government* must create broad provincial land use strategies that account for full systems cost, within the context of the national government framework. In addition, they will need to orient the subsidy policy to support the corridors, and are responsible for urban roads.
- *The Roads Agency* will need to align investments in national roads in urban areas with the local corridor strategies developed by local entities.
- *Local Government and Metropolitan Transport Authorities* will be responsible for developing land use and transport plans, and will now need to be integrated into planning for major commercial and residential developments. And their subsidy allocation procedure must be linked into the corridor densification strategy.

Taken together, this creates a substantial co-ordination agenda for housing finance, utility services, transport infrastructure, and transport services. This, in turn, will necessitate the creation of decision rules for consultation processes and for the integration of land use decision-making.

Because land use is the anchor of the strategy, it will determine how the other two strategic actions are executed at the local level. And since corridor densification is a long-term effort, these other actions should be implemented in parallel and in support of densification.

Strategic Action: Optimise Economics and Service Mix

Four levers play a role in this category of strategic actions, all of which work to lower the systems cost, increase the scale of operations, and provide better service along the corridors:

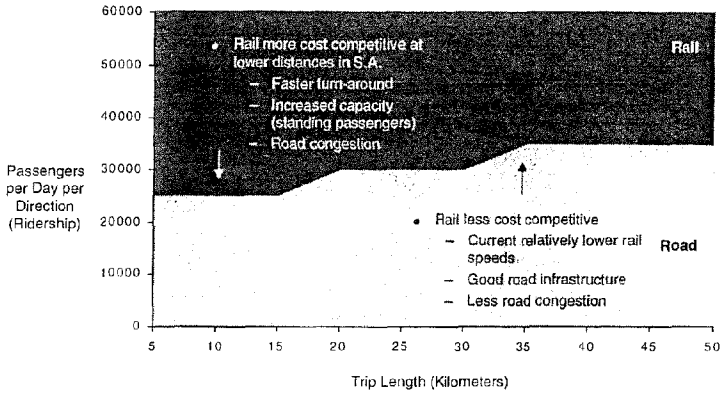
- Focusing infrastructure investment;
- Reorienting, and improved targeting, planning and operation of public transport services;
- Managing road space
- Targeting subsidies to the poorer segments and use of the optimal mode.

Focus Infrastructure Investment

Infrastructure investment levels are currently inadequate and do not support corridor development. Investment is generally spread among all geographic areas, without specific targeting based on need. Road investment prioritises on the basis of congestion levels rather than other criteria, and gives little or no priority to public transport in the allocation decisions or conditions on usage. And, commuter rail infrastructure is dramatically underfunded. In short, infrastructure investment has historically primarily supported car users, rather than meeting the national objectives for public transport.

Looking ahead, future infrastructure development in densified corridors is likely to focus primarily on roads as the most economic and flexible solution. In general, rail is the lowest cost mode for higher volumes of passengers, and road for lower volumes. A high proportion of dense corridors already have commuter rail infrastructure, and the density levels on other corridors are unlikely, in most cases, to support rail infrastructure. **Figure 85** below provides an illustration of the comparative economics of road versus commuter rail infrastructure over different distances and ridership levels.

Figure 85: Illustrative — Lowest Cost Infrastructure Over Specific Distance and Ridership Volumes in South Africa

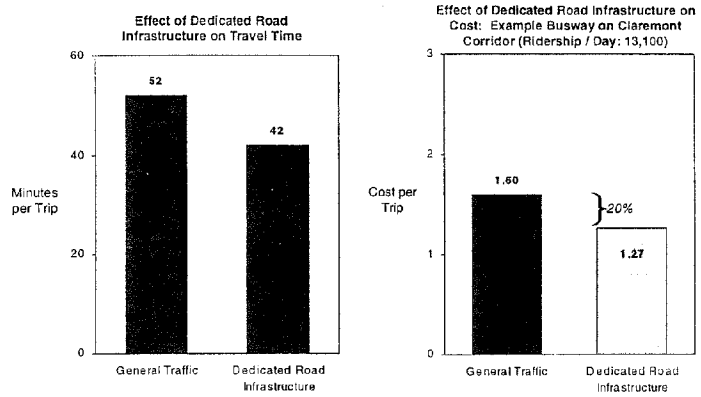


Source: del Mistro, MSA analysis, assumptions: Costs based on Phase II research, Line haul comparisons, Average cruising speeds in mixed traffic (excluding the effects of stops and acceleration and deceleration): (0-10 km - Rail = 30 km/h and Road = 35 km/h); (10-50 km - Rail = 60 km/h and Road = 75 km/h), Time lost at stops due to acceleration and deceleration: (0-10 km - Rail = 53 sec/stop and Road = 10 sec/stop); (10-50 km - Rail = 53 sec/stop and Road = 23 sec/stop), Time lost at stops due to on and off loading: (Rail = 30 sec/stop); (Road = 7 sec/passenger), The minimum service level is established by ensuring that average waiting time does not exceed: (5 minutes in the peak and 10 minutes in the off-peak for road); (7.5 minutes in the peak and 15 minutes in the off-peak for rail), Residential density is assumed to be approximately 90 person per hectare (a reasonable average given high income densities of 16 p/ha and low income densities of 142 p/ha in East London and Cape Town), Rail costs include the cost of way (R10M - one line per direction), terminals, stations and staging yards, Road costs include the cost of terminals and depots, but exclude the cost of way and cost of stops, The construction cost of way for road is included where a dedicated way is required

In most countries, commuter rail is more competitive than road over longer distances because of road congestion and good rail infrastructure. In South Africa the opposite is true because under-investment in rail infrastructure has reduced train speeds and there is good, uncongested road infrastructure. These two factors are major contributors to the distortion in modal share highlighted in the situation analysis in **Section 7** above.

In some cases, dedicated road infrastructure for public transport – most likely in the form of busways – can provide the optimal solution, allowing increased speeds and comfort levels. MSA determined, as displayed in **Figure 86** below, that dedicated infrastructure can save between 5% and 20% of operating costs, if it improves speed by 25% over current performance, and achievable improvement over stretches of road in densified corridors. Without dedicated or prioritised road infrastructure for public transport, corridor densification is unlikely to yield the improvements in public transport cost and service levels envisaged by the MSA strategy.

Figure 86: Impact of Dedicated Road Infrastructure



Road infrastructure offers better flexibility than rail infrastructure – public transport vehicles of all sizes can use roads at different times of day and week, depending on demand patterns over time. Thus, creating a lower fixed-cost infrastructure provides more flexibility to innovate as customer needs change over time.

On the basis of the above economic analysis, Moving South Africa has developed a proposed set of broad guidelines for determining what type of infrastructure is appropriate for corridor. These are guidelines only, and Transit Authorities must examine each corridor on its own merits:

- **High ridership corridors** typically with 40,000 or more passengers/day per direction, although the minimum can change depending on local circumstances.

  These corridors are likely to support rail or dedicated public transport road infrastructure in congested areas. Where rail lines exist already, local TAs need to consider upgrading the existing assets in order to reduce costs and improve service, particularly for areas over 10 km from CBDs. Line haul on road-based corridors will likely be served primarily by bus. There may be a case for commuter rail line extensions in some areas. Feeders should be by bus or taxi.

- **Moderate ridership corridors** with approximately 10,000 – 40,000 passengers/day per direction

  The best option for these corridors is likely to be road infrastructure, with priority or dedicated infrastructure for public transport over parts

of the corridor. Commuter rail is generally not warranted. Line haul on these corridors will likely be served primarily by buses, with feeders from bus or taxis.

- **Low ridership corridors** with fewer than 10,000 passengers/day per direction.

  These corridors are likely to require two types of investment: (1) road-based public transport priority schemes, since volumes do not warrant dedicated infrastructure, and (2) paving of all feeder roads used by public transport. Line haul here will fall primarily to taxis or other small road-based vehicles, with taxis also providing feeder service into the corridors.

Although substantial investment in new rail lines is unlikely, there is a strong need for additional rail investment, to keep the infrastructure in good condition and to upgrade existing lines in order to improve speeds and service levels. More generally, the strategy requires increased investment, to create improved access to rail, taxi, and bus stations and for intermodal facilities.

Reorient Public Transport Planning and Operation of Services

This category of actions pertains to the process of better matching the economics and service delivery of modes with the needs of the various segments of public transport customers. The current system, in general, is planned around operator's needs with little distinction, beyond geographic, amongst customer groups. The strategy aims to change this by grounding customised city solutions in new, researched customer segmentations. Thus, an understanding of the customers and their needs should form the basis of planning services along a corridor.

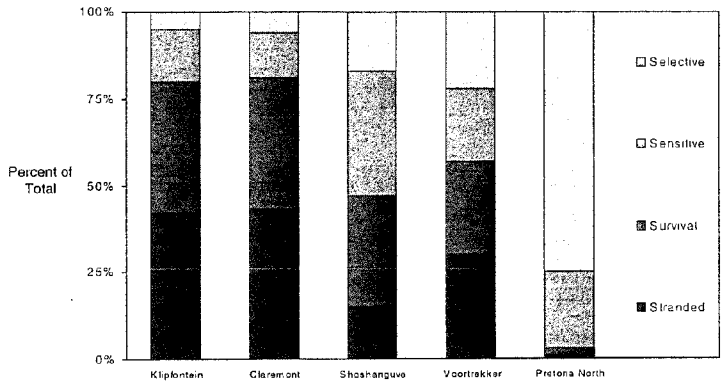
The *Moving South Africa* strategy proposes to meet public transport customer needs through a combination of tendering basic services and facilitating the provision of differentiated services. The differentiation will be on the basis of customer willingness to pay a higher price for a more convenient service with better speed or comfort. In addition, for the strategy to work, the planning and regulation must encourage integration of modes and the achievement of economies of scale. The emphasis is on the need for an integrated network. As such, solutions will center more on providing a certain basic higher level of service (defined in terms of minimum service levels) which cater for most customer groups along the corridor. Differentiated services will be facilitated (not subsidised) where required.

Tailor Solutions to Segments. Each segment, as the situational analysis revealed, has differing needs and priorities from the public transport system.

For instance, whereas the Stranded segment focused on low cost accessibility, Selective customers did not emphasise affordability issues. For them, a higher level of service may be required, since they have the option of using a car instead. Each corridor, as a result, will have a different mix of customer segments, and so will require a different mix of basic access services and premium differentiated services. The objective is to encourage integration and achieve economies of scale, and, if necessary, support with subsidies, basic services which use the optimal mode, while allowing differentiated, high service alternatives to operate without subsidies.

An analysis of the composition along five independent corridors, for example, suggests that solutions for Claremont will require a focus on affordable basic access, whereas solutions for Pretoria North ought to center on quick travel times and high levels of convenience. The segment makeup of these corridors is detailed in **Figure 87.**

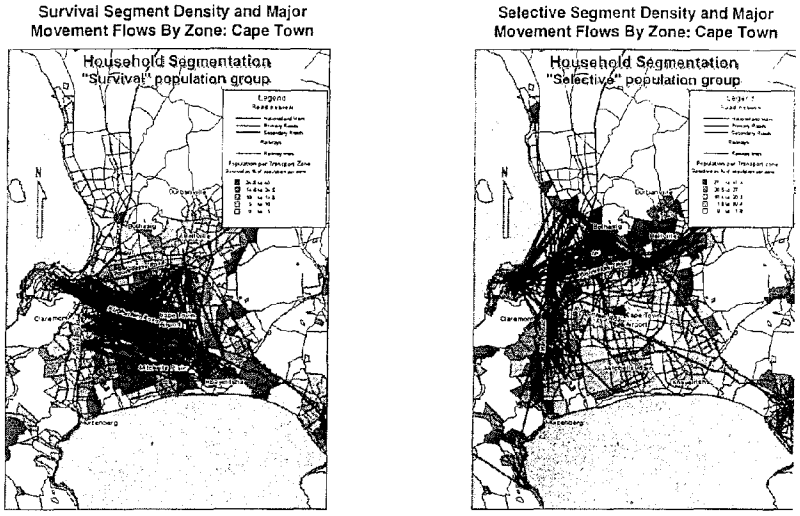
Figure 87: Customer Segmentation by Corridor



Source: GIS system, CSIR, MSA analysis

MSA and Cape Town's analysis of the segment travel patterns in the Cape Town metro area revealed very different needs and flows by segment. Indeed, different segments often travel along different corridors altogether, as illustrated in the maps in **Figure 88** below, with Selective segment passengers following a more dispersed pattern than their survival segment counterparts.

Figure 88: Corridor Segmentation: Cape Town



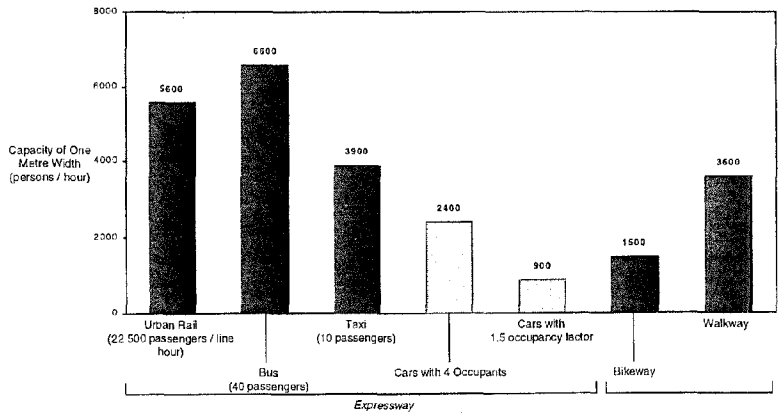
At the local planning level, this type of thinking must be anchored in a specifically developed segmentation model that yields actionable groupings of customers around whom a low systems cost strategy can be built. The needs of the Stranded must be taken into account in conceiving and configuring the affordable, low systems cost backbone.

Integrate Modes and Feeders. Current public transport planning also does not sufficiently integrate feeder services, and the move to a corridor approach will create even more need to do this properly. Very few customers -- fewer than 5% -- currently make intermodal transfers, in part because the system is not planned or physically laid out on a basis that encourages or permits such switching. Optimising the modes for line haul along corridors will require increased coordination across modes and schedules to permit lower density traffic to feed into the corridors.

Manage Road Space. In addition to reconfiguring the planning and operation of infrastructure and public transport service, the strategy will fail if it does not comprehensively address private car usage as a part of the overall urban service mix. The situational analysis revealed a growing pattern of car dependency in South Africa that is likely to grow – if left unchecked. Increased car usage will divert passengers from public transport. The critical issue here is not ownership but utilisation of cars, in the peak hours in urban areas.

Rising levels of car utilisation create additional congestion largely on the basis of their inefficiency in using space. As **Figure 89** indicates, a car – even carrying four occupants – is far less efficient than any other mode. Commuter rail and buses, at full capacity, offer the greatest capacity per metre. Thus, in an environment where funding and other resources for expanding road capacity are severely constrained, car use significantly impedes getting maximum value for public infrastructure investment.

Figure 89: Mode or Type of Way: Capacity of One Metre Way



Source: "Fast Wheels, Slow Traffic," Wright, 1990

Cars and the Efficient Use of Road Space

Cars are relatively inefficient users of road space, compared with other modes of passenger transport. As the following table shows, with an average occupancy of 1.5 people per vehicle, cars are able to carry only 15% of the passenger capacity of bus or rail per metre of infrastructure. Even with four occupants per vehicle, cars are only 40% as efficient in their use of space as bus or commuter rail. Taxi efficiency falls in between, at 60% - 70% of bus or commuter rail efficiency.

Passenger Capacity per One Metre of Way (persons per hour)

Therefore, cars are not the most effective way of providing transport capacity

Mode and Occupancy	Capacity
Bus (40 passenger)	6,600
Commuter Rail (22,500 passengers)[1]	*5,600*
Taxi (10 passengers)	3,900
Cars (4 passengers)	2,400
Cars (1.5 passengers)	900

in urban areas, although they could be in rural areas. Urban transport policy which focuses on provision of public transport, therefore, entails lower road requirements and therefore lower infrastructure expenditure compared with a car-based urban transport system.

Customer research in Phase 2 of the project (the situation analysis) indicated that the most important considerations for both Stubborn and Selective segments, the car-owning passengers, was time and convenience, rather than cost. This finding signals two insights for the strategy. First, any action to manage car use must not be based solely on cost, but must target travel time by reducing the time to travel by public transport, relative to travel times for car users. Second, there is significant space, due to high price inelasticity amongst users, to raise funds from improved charging mechanisms.

The strategy, therefore, recommends three main streams of tactical actions to manage road space. The first mechanism available is increased charging, which would increase the cost of using a car and more genuinely reflect the economics of car use, by internalising the costs, shifting the switching point between car and public transport. Tactical choices in this realm will require decisions on whether to use the fuel tax, parking charges (at employment locales as well as off-street residential), and area pricing. Electronic road pricing is being tested in various cities around the world, and within the 20-year horizon of the strategy, this may become feasible in South Africa. Charging for road usage constitutes the best option because it creates signals at the point of usage and is flexible since the charges can be varied by route or section of route (e.g. high charges in areas close to business centres), by type of vehicle, and by time of day.

The second set of mechanisms available entail controls, which principally affect car users' *time* utility rather than cost preferences. Tactical choices here can include priority schemes like provision of dedicated lanes for buses or registered taxis, closing off streets to private car users, parking controls, or provision of facilities for cycling or walking. Any such schemes must be carefully integrated into larger metropolitan-level urban planning efforts, however, to ensure that they do not produce unintended consequences by encouraging employers, for instance, to move to more permissive jurisdictions and thereby dilute the economic base of an area.

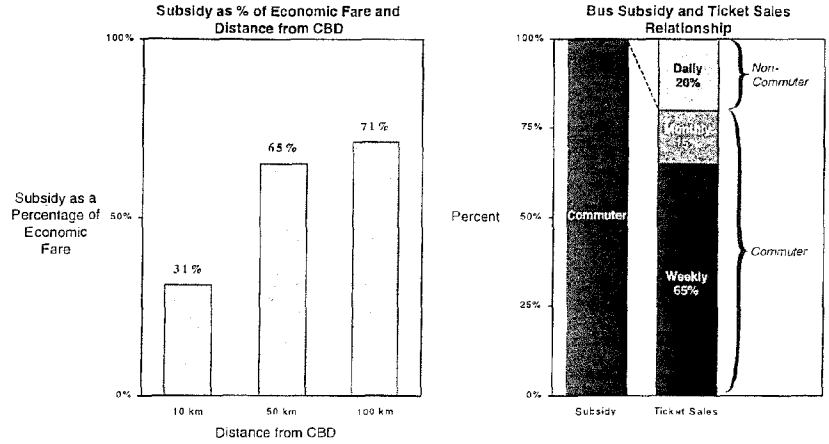
The third set of mechanisms require the provision of acceptable alternatives to the private car. Tactical choices are numerous in this realm, and they dovetail with larger strategic efforts to improve spatial planning, which can reduce the need for a car altogether. Some choices that Transport Authorities will confront include upgrading of bus fleets, developing a more effective metered taxi industry, or allowing the use of HOV lanes by multiple-occupant cars. In addition, creating a system which facilitates the simultaneous operation of differentiated, premium services along a corridor creates an additional magnet to pull car users into the alternative system.

Thus, tough management of road space, by any mechanism, becomes a critical centerpiece of the South African urban transport strategy, and must be implemented in parallel to, or in advance of, the other initiatives. Without such action, car users can, on their own, render ineffective other well-developed plans for densification along corridors and the concomitant investment in infrastructure. Improved roads along corridors, for example, will attract car traffic if not managed properly, worsening congestion along the very corridors that should flow most smoothly to meet the public transport goals of the majority of passengers. Naturally, tough management necessitates vigorous and disciplined enforcement of all regulations affecting car use, including licensing, road worthiness, insurance and safety.

Strong management of road space requires substantial political will and integration in metro areas, and it is a task that becomes more difficult over time as increasing numbers of people come to rely on automobiles, land use and economic development proceed based on assumptions of car usage, and demands rise for additional car-centric solutions. This becomes one area where South Africa can differentiate itself from the rest of the world, if action is taken soon. Most countries in South America and Asia, as well as in Europe and North America, have only addressed the problem seriously once congestion has reached a crisis point. Finally, and importantly, the revenues generated from some of the mechanisms to create the proper incentives for car usage can also raise funds for local government to use in the improvement of local public transport.

Target Subsidies. Subsidies currently constitute a significant portion of urban transport funding, costing the fiscus R2.8 billion annually. However, they still remain a function of the objectives of the apartheid era. Those objectives centered on moving working commuters long distances from decentralised homelands and townships, and only at peak periods, despite some of the locations being far afield of any economically rational metropolitan boundaries. **Figure 90** illustrates the legacy, where the subsidy increases as a portion of the economic fare over longer distances, and where 80% of bus subsidy effectively supports commuting only. As a result, very little of the subsidy reaches those who need it most, the Stranded.

Figure 90: The Bus Subsidy Legacy



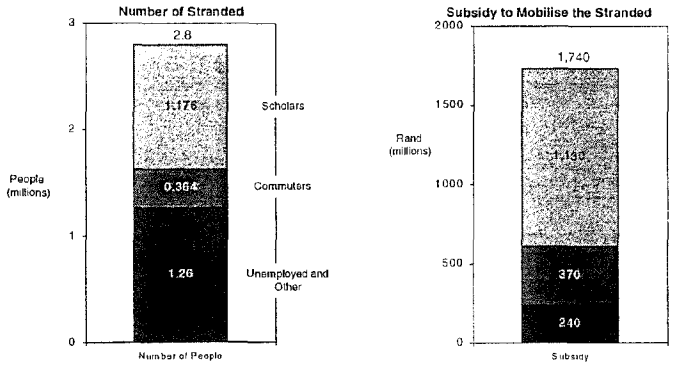
In addition to inefficient targeting, the subsidy mechanisms have not contributed to renewing the system and keeping it sustainable in the long-term. Municipal buses, because they are funded by the deficit system, have collected an increasing level of subsidy per trip – up 50% between 1991 and 1995 – as their ridership has decreased over time. And the national subsidy to rail and long-distance bus primarily supports operations, rather than capital costs, making it difficult for operators to upgrade their fleets, improve service levels and efficiencies, and reduce maintenance costs.

In response to the performance of the current arrangements, the MSA urban strategy re-targets subsidies, which will still be necessary, to the following objectives:

- Provide affordable access to the stranded;
- Support the use of the optimal mode on a corridor and encourage feeder services;
- Begin to switch subsidies to capital expenditure.

The cost of providing affordable access to the Stranded is substantial. MSA has calculated the cost of mobilising the Stranded to be an additional R1.74 billion, or an additional 50% of the existing subsidy payments. **Figure 91** details the composition of the Stranded amongst scholars, unemployed, and commuters.

Figure 91: Subsidies Required to Mobilise the Stranded



Note: Unemployed and other travel 2.5 times per week; Other stranded segments travel 5 days per week
% stranded mobilised: Commuter: 100%, Unemployed and other: 100%, Scholar:100%
Marginal cost of bus and rail in off-peak is 40% of total cost, and taxi is 60% (for unemployed).
An alternative may be to provide scholars with non-motorised transport — this has not been included in the analysis above
Source: OHS survey, MSA survey, MSA analysis

The most effective way of providing the subsidy in the short term is to subsidise operators through the tendering system, to provide feeder services or extension services to areas where the Stranded live, at low cost to the users. Inevitably, there will be some leakage in that non-Stranded passengers may use the services, but with effective service planning, leakage can be minimised. In the long term, if a welfare system is introduced, subsidies may be paid directly to users.

Other actions in the strategy will result in savings elsewhere in the system that can be applied to mobilising the Stranded. For instance, the strategy will improve firm level efficiency in terms of reduced fare evasion and through tendering. Additional savings can be realised through use of the optimal mode on a corridor, which will result in higher utilisation rates and better efficiency. These savings and the net subsidy position are detailed later in the report.

The MSA strategy envisions that the subsidy will become one way to ensure the vision of the optimal mode providing the baseload line haul service on a corridor. Subsidy can be used to ensure that the optimal mode retains the lowest cost structure, thereby enhancing affordability at a basic level. Other high occupancy modes can compete with the optimal mode along a corridor.

but they will not receive subsidy and will be expected to compete on the basis of differentiated service. The subsidy should also be used to enable feeder services into the corridors, and should be administered in a fashion that enables intermodal transfers into the corridors.

The third prong of the subsidy reorientation is to address an increasing proportion to capital, rather than operating costs. The situational analysis documented the high level of asset deterioration – the fleet is above 82% of its average economic life – that is endemic in the urban transport system in South Africa. Subsidy re-targeting will enable operators to upgrade equipment and improve operating costs and efficiencies, while providing more comfortable service with less need of maintenance and less risk of accident. Recapitalisation can be built into tendering and regulations.

Strategic Action: Improve Firm-Level Performance and Productivity

The third major category of strategic actions in the urban setting revolves around firm-level performance, where there is still much room for improvement. While it is ultimately the transport-sector firms themselves that must improve their performance, several actions by government can set the platform for improved firm-level performance and rising productivity. The expectation is that once the 'rules of the game' have been clarified and set, the firms are responsible for delivery. The strategic actions that can help build the platform are:

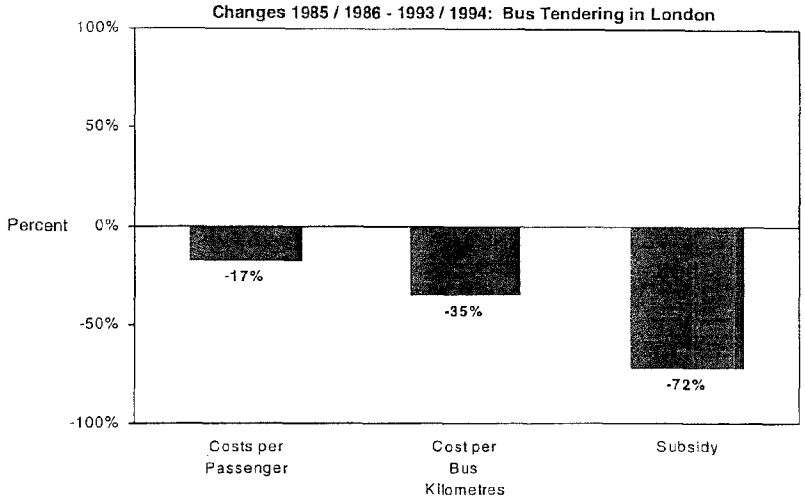
- Public transport tendering
- Industry regulation, especially for taxis
- Improving the sustainability of modes, including taxi, rail, and bus

As with the mechanisms for managing road space, these actions also must occur in parallel in order to be effective.

Public Transport Tendering

The MSA strategy emphasises tendering or concessioning bus and rail operations to create competition for the market and consequently promote innovation in order to win the contract. This should also raise levels of service for a given cost. This tendering and concessioning process has already begun in buses and commuter rail respectively. International experience indicates – as **Figure 92** displays – that regulation through tendering is an effective way of reducing both costs and subsidies.

Figure 92: Saving Following Bus Tendering in London



The MSA strategy envisages that future bus tenders give more flexibility to operators to change service patterns in response to customer needs and to keep the benefits of productivity improvements. Rail concessioning should be similarly structured For road-based tenders, the contract need not even stipulate a given modal solution; rather, it should focus on performance objectives for operators to be met in any appropriate fashion. In addition to the competition for the market or the route, the strategy recommends allowing intermodal and/or intramodal competition for services. However, this competition should be unsubsidised and on the basis of offering a differentiated service, with the optimal mode for a given corridor providing the lowest-price service to ensure affordable basic access. Such competition will encourage improved levels of service, as well as ensuring that users have a choice and can make appropriate service/cost trade-offs.

Industry Regulation, Particularly of Taxis

A variety of regulations already exist in the South African urban transport setting, including the registration of vehicles and the RTQS safety standards. One area stands out, however, as needing more effective regulation: the taxi industry. The roots of the taxi industry are in the informal sector, and it has continuously been a primary source of empowerment opportunities for historically disadvantaged segments of the population. Indeed, until this decade, the taxi industry was one of the only places to become a successful black entrepreneur in South Africa. Part of the legacy of the apartheid past is therefore an industry with no effective regulatory structure, yet one that also now carries the majority of urban mass transport trips in South Africa. Much

of the reason for the success derives from relatively low prices for a relatively flexible mode. But the industry's success in capturing market share also emanates from a failed regulatory structure, especially prior to 1994.

Given the size and dominance of the taxi industry, no urban strategy can be effective without addressing the regulatory issues. Just as failure to manage car use can undermine the strategy, failure to implement effective regulation of the taxi industry can also incapacitate the remainder of the urban strategy. Whereas unmitigated car use threatens to congest the corridors, however, a taxi industry that is not formalised or regulated threatens to operate in competition with the optimal mode on a corridor, reducing ridership on key line haul routes. This, in turn, worsens the operating economics of the bus or train operator, thereby increasing the need for subsidy and worsening service levels. As a result, coordinating the solution for the taxi industry with the rest of the strategy is essential.

The industry is still largely informal and, existing regulations are difficult to enforce. At the moment, the taxi industry is suffering from a cycle of unsustainability and an impending recapitalisation crisis. In 1997, the industry spent only 35% of the required investment to replace the fleet, and as a consequence, average fleet ages continue to climb. These aging taxis also create safety hazards on the road.

In response to these trends, the Moving South Africa strategy emphasises ***formalisation*** of the industry as the critical first step. Included in the MSA notion of formalisation is the notion of efficient control of routes and permits within a corridor, effectively managing the supply of taxis through appropriate entry barriers. This is a confirmation of the NTTT recommendations.

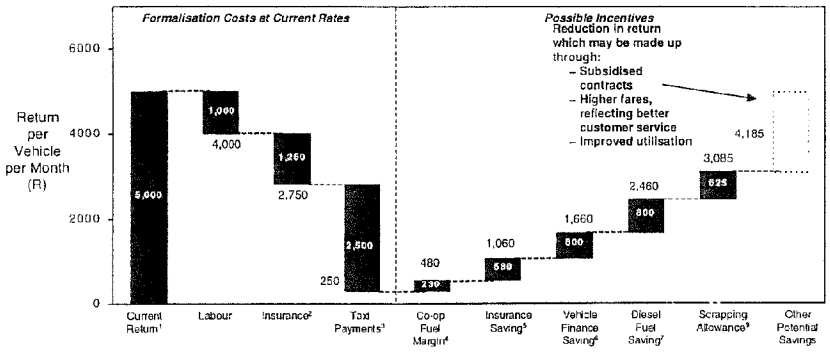
The current set of incentives and levels of enforcement have proven insufficient to ensure the accomplishment of formalisation or other taxi regulation. And while the cost of enforcement may initially appear high, the cost proves to be relatively low in comparison to the level of subsidy – almost R3 billion – to the train and bus sectors. New incentives and enforcement programmes must align the taxi industry to the strategy, in which they will play a critical role. The strategic actions should tie the incentives to the goals of:

- *Encouraging appropriate roles* for taxis in keeping with their inherent modal economics. This role becomes one of line haul on moderate and lower density corridors, and feeders or distributors on the higher density corridors and a carrier of more dispersed flows, requiring a higher degree of intermodal transfers than before. Their superior economics within this context could facilitate their participation in subsidised contracts.

- *Creating an industry that is sustainable* and profitable and can afford to reinvest in its equipment
- *Migrating the industry gradually to larger vehicles* in order to facilitate their role in a larger road-based transport industry, but only following formalisation and regulation

A variety of potential incentives are available to encourage formalisation and enhance long term sustainability. But the incentives must only be provided to operators who agree to formalisation and playing the appropriate role in the urban modal mix. The graph in **Figure 93** demonstrates the cost impact on the 'average' taxi on a Soweto – Johannesburg route of various effects of formalisation and offsetting incentives.

Figure 93: Potential Costs and Benefits of Formalisation for Taxi Operators



¹ Average return for busy Soweto-Jhb route
– No insurance or payments. Driver wages are R1,500 per month
² 15% of vehicle value
³ Taxi payments at 28% over 36 months with R40,000 deposit
⁴ 1000 litres per month * 0.23 cents per litre
⁵ Premium drops to 8% of vehicle value due to formalisation
⁶ Rate drops to 22% over 48 months with R20 000 deposit due to formalisation
⁷ Fuel: 1000 litres per month * 2.30, diesel: 750 litres per month at R2 per litre
⁸ R55 000, R20 000 deposit, 22% interest for 4 years, additional insurance saving of R300 per annum
⁹ R15 000 scrapping allowance over 24 months

One goal of formalisation, given the recapitalisation crisis and the safety problems, will be the introduction of newer, safer vehicles. This step, however, will likely raise operating costs for taxis, primarily in the areas of increased insurance payments[27] and higher capital repayments. Formalisation could also lead to higher labour wage costs for operators. On the other side of the balance sheet, there are six separate potential incentives, or tactical actions, available to make up the lost operating margin, ranging from savings on insurance from owning safer vehicles to a potential cost benefit from switching to lower priced diesel fuel. Additional tactical options for restoring part of the returns include subsidies to taxis where they are the optimal mode on a line haul or feeder route. The strategy should also provide more stable returns over the long run to taxis by returning effective modal balance along

[27] Many, though not all, taxis currently do not purchase insurance at all.

corridors. In many high volume corridors, taxis will not become the optimal mode, leaving them free to provide higher convenience, differentiated service at a price premium over the corridor's optimal mode as well as over the current pricing structure.

However, for formalisation to be successful, it must be combined with active enforcement in order to control routes and permits and convince associations and operators that the government is serious about the program. Such enforcement requires three components:

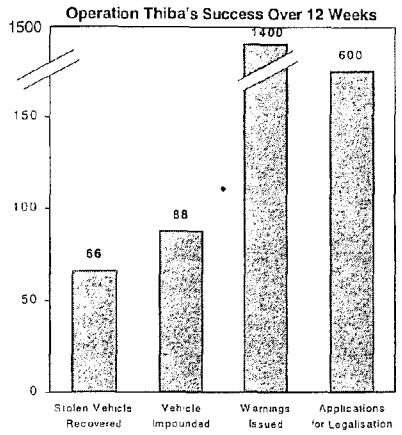
- Proactive high pressure, high visibility campaigns in the short term targeted on particular areas
- Completion of a process already begun through the NTTT of registering all associations, operators, and routes, with results compiled into a national database
- Maintenance of entry barriers and control over routes and roll-over into other areas

In early 1998, NDOT facilitated a process through which the Gauteng Provincial Department of Transport (Gautrans) and the North West Provincial Department of Transport, together with the South African Police Services (SAPS) and the the South African National Defence Force (SANDF) undertook a 12 week exercise titled Operation Thiba, to promote some of these goals, focusing primarily on enforcement.

The project cost approximately three million rand and was reasonably successful as 66 stolen taxis were recovered; 88 taxis were impounded; 1400 warnings were issued and 150 applications for legalisation were received. In addition valuable information on the number of vehicles operating in the target area was obtained. However, the entry barriers were not sustained after the twelve week campaign due to a lack of funds. The result was that many of the illegal operators waited out the campaign and re-entered the market which led to a resurgance of violence.

While the operation delivered some effective results, particularly in issuing almost 1500 warnings and spurring 150 applications for legalisation (see **Figure 94**), the project was equally valuable for its lessons.

Figure 94: Impact of Operation Thiba



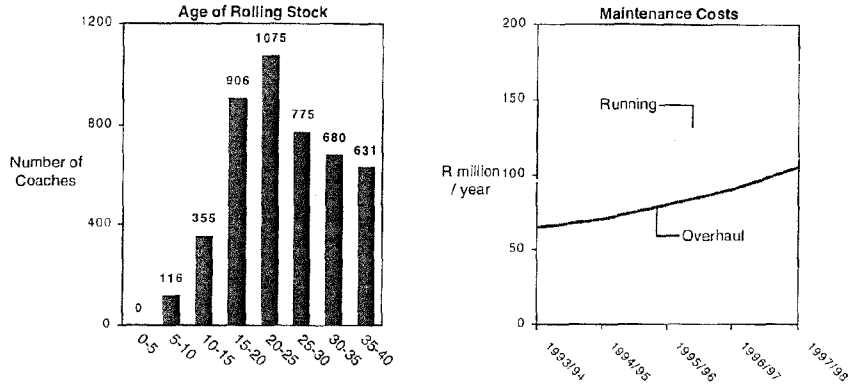
Operation Thiba demonstrated that high pressure campaigns can be successful in reducing taxi violence, but that entry barriers need to be maintained in order to stabilise the industry beyond the limited time period of the campaign. On the positive side, Thiba showed that the cost of enforcement should not be prohibitively high; to extend it to all troublespots in Gauteng for 10 months would cost less than 1% of the annual national budget for subsidy on buses and commuter rail.

Improved Sustainability of All Modes

As the situational analysis demonstrated, none of the urban commuter modes are reinvesting sufficient amounts to cover recapitalisation costs. This creates a downward spiral of competing on price rather than service, running assets down, and creating safety hazards as a consequence as maintenance levels drop. The strategy must reverse this through a series of strategic actions aimed at promoting a healthier industry that can become self-sustaining over time and respond to customer needs. In each mode, the proposed strategic action differs.

Commuter Rail Sustainability: The average age of commuter rail rolling stock is 25 years old, creating steadily increasing maintenance costs and resulting in slower speeds and increased travel time for customers. No new rolling stock has been added to the fleet in the last five years. As a result, maintenance costs have escalated sharply since 1995, as **Figure 95** illustrates. Estimates from a study commissioned by the SARCC suggest that reinvestment in rolling stock of R300 million, or more, per annum is required to halt rising costs and improve operational safety.

Figure 95: Commuter Rail Fleet Age and Costs



Currently in South Africa, only 20% of the subsidy is spent on capital investment, with the rest supporting operations. The MSA strategy recommends reversing the imbalance, and reorienting rail subsidies to place a greater emphasis on capital replacement. Newer equipment will allow the rail system to run at lower operating and maintenance costs, whilst improving service levels to customers on key corridors where rail is the optimal mode. The example of rail concessioning in Buenos Aires is an illustration of how sustainability of asset upgrading and replacement can be built into tendering and concessioning.

Rail Concessioning in Buenos Aires

By the early 1990s, the Buenos Aires commuter rail system was in poor condition. After decades of underinvestment combined with inefficient operations, infrastructure and equipment was dilapidated, service was poor and the system operated at a very high cost. As a result, passenger volumes had halved compared to 30 years before. As a result, annual operating subsidy reached US$500 million, with only a small proportion designated for reinvestment.

In 1993, the Argentine government opted to split up the system and to concession the parts to private operators. The concessions specified – in detail – the upgrading of infrastructure and rolling stock required and service levels for rail operations. The concessions requested combined bids for the investment the bidders were prepared to make for upgrading, and for the operating subsidy required each year over a 5 – 7 year period.

The winning bids all projected a reducing subsidy over the concession period, and a significant switch from operating to investment subsidy. In total, over

the concession period, the investment subsidy required was US$640 million[28] and operating subsidy only US$120 million. This averaged only US$150 million per annum compared to over US$500 million before the concessioning.

The actual experience since 1993 is that the winning bidders have improved the performance of the system substantially. Ridership has increased, fare evasion has been eliminated, the promised investment has been spent, and the condition of the system – in terms of assets and service levels – has improved. Because of the improved service, the government has been able to implement higher fare increases than anticipated, further reducing operating subsidy and increasing farebox cost recovery levels.

Although Argentina and South Africa have very different prevailing conditions and unique urban environments, the example from Buenos Aires provides instructive lessons on stabilising commuter rail systems.

Bus Sustainability: As in rail, the average age of the bus fleet in South Africa is gradually escalating, from 10.1 years in 1991 to 12.7 years in 1996. At the same time, ridership has been declining, from 780 million trips in 1991 to 650 million in 1995. The consequence of this, in part due to the deficit subsidy mechanism for municipal buses, has been to increase subsidy per trip from about R2 in 1991 to just over R3 in 1995. The decreasing sustainability has negatively affected the ability to give customers satisfactory service; most customers interviewed during the situational analysis complained of poor equipment and service levels.

The *Moving South Africa* strategy relies on tendering of subsidised bus services to address the sustainability issues, where concessions would include explicit provisions for fleet standards, such as emissions, which will encourage fleet replacement. In addition, moving to a corridor-based system, and optimising the economic and service mix of the various modes, will improve utilisation levels and hence, operating efficiencies. In addition, changing the subsidy funding mechanism will reduce the level of subsidy per trip.

Taxi Sustainability: As discussed in the regulation section above, a number of measures will improve taxi industry sustainability, most significantly improved regulation of entry and permissions. Again, however, the key to success in shoring up the sustainability of the industry will be the formalisation process, and the follow-on enforcement activity, which will insist on recapitalisation of the industry.

[28] On a net present value basis

Taken in concert, these actions should provide the foundation for an urban transport sector that is much more self-sustaining in the longer term and performing substantially better against customer objectives. With sustainable providers, the possibilities for providing differentiated service increase substantially, as service considerations move up in importance vis a vis the historically dominant emphasis on cost.

Benefits and Funding

As with the freight strategy, the urban strategy will generate substantial financial benefits; unlike the freight strategy, however, South Africa should not expect to distribute these benefits immediately – many will be ploughed back into the system through recapitalisation and increased susbsidies for the Stranded. In terms of service benefits, MSA expects positive returns from the strategy in the form of increased access, mobility, and service levels.

Funding

In the short term, the current funding of the system needs to be maintained and directed towards creating an effective public transport system. For example, additional enforcement resources will be required to create a safer system, reduce externalities, and manage the formalisation of the taxi industry. The strategy will also require additional investment in corridor infrastructure in the early years, in areas including:

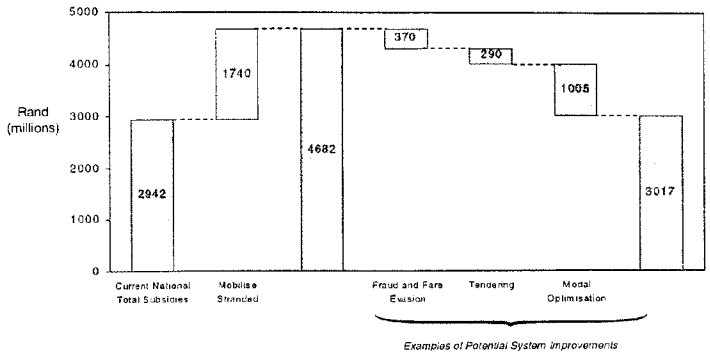
- New investments in infrastructure, especially road-based solutions like dedicated public transport busways
- Upgrades of existing infrastructure, like commuter rail track and signalling, paving critical feeder roads into corridors, etc.
- The creation and upgrading of intermodal and multimodal transfer facilities

Conversely, some investment funding should become free from other sources, as the strategy withholds spending on de-prioritised infrastructure like urban roads designed primarily to enhance car, and not public transport, usage.

Also in the short term, spending will be required to improve public transport operations, and not just infrastructure. This will come in the form of, for instance, the purchase of newer rolling stock for the commuter rail network to upgrade service quality and lower operating costs in the rail corridors. Additional spending to create cost reductions will also be necessary.

These expenditures would, in turn, generate savings at the firm level which could then be applied to provide affordable basis access for the Stranded. **Figure 96** illustrates examples of potential savings.

Figure 96: System Savings and Subsidy Requirements



Note: Tendering and concessioning: 10% subsidies savings (1180 bus, 1105 rail, + 630 parastatal and municipal bus), Fraud and Fare Evasion: rail 30% (SARCC and MSA Phase II, 30/70 * R530M passenger revenue, bus 10% (private operator interviews, 10/90 * R1189M passenger revenue), Modal optimisation: 25% saving on (4682 -370 - 290) * 45% optimisation on sample of 5 corridors reduced by 20% for cost of feeders (Soweto example)
Source: MSA Analysis, SABOA, OHS survey, MSA survey, SARCC, private operator interviews

There are a number of potential system improvements which could result in economic savings (for example, fraud and fare evasion and tendering). In addition, improved capacity utilisation can be realised by optimising the modal economics which should yield savings over time, which would, in the long run, reduce subsidy requirements. MSA estimates that savings of up to 25% can be realised as a result of optimising on the least cost mode in a given corridor

Figure 97 details the integrated view of potential sources and uses of funds in the urban strategy, in the short, medium and long term.

Figure 97: Funding Sources and Applications for Urban Transport

Short-term Generation / Redirection of Funds

Additional sources (ring-fenced?)
- Fares
- Tolls
- License fees
- Parking charges
- Fuel levy

Redirected sources
- Reduce investments which benefit all road users
- Reduce untargeted subsidies
- Only subsidise optimal mode

Increase external funding?

Short-term Application
- Investment in
  - Corridors
  - Public transport
- Upgrade public transport services
- Subsidise Stranded / Survival
- Enforcement
  - Improve safety
  - Reduce externalities

Medium Term Further Generation of Funds
- Optimise modal economics
  - Only subsidise optimal mode
- Densification of corridors
  - Reduce commuter distances
  - Improve utilisation of public transport
- Housing developer charges
- Concessioning

Medium / Long-term Application
- Investment for sustainability
- Enforcement
  - Improve safety
  - Reduce externalities

Ultimately, however, the decision on how to allocate the benefits in a particular city is one that is beyond the scope of the MSA strategy, as long as the allocation is consistent with the national objectives and strategy vision.

Benefits to Customers and the Nation

The initiatives of the strategy, though they will require additional resources, should deliver substantial benefits to the nation and to customers if the strategic actions are implemented in a concerted, coordinated fashion across the entire fabric of each urban area.

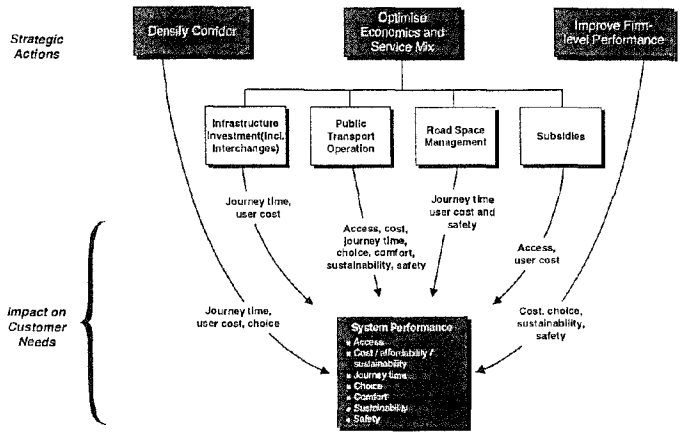
- Lower systems costs by
  - Building density in the system, particularly along corridors
  - Optimising modal economics within corridors
  - Coordinating land use planning
  - Improving firm-level performance through increased reinvestment
  - Improving regulation and allowing for competition where feasible

- Improve public transport customer service levels and accessibility by
  - Building density in the system, particularly along the corridors, and coordinating land use planning
  - Investing in infrastructure along the corridors
  - Tightening road space management
  - Focusing subsidies
  - Improving firm-level performance through ensuring sufficient reinvestment and more effective regulation

- Offer customer choice by planning an affordable backbone system but allowing competition along corridors on the basis of higher cost/higher service
  - Improving planning and coordination at the metro level and increasing the skilled capacity to do so
  - Improving regulation and allowing for competition where feasible
  - Focusing subsidies
  - Building an industry platform that allows operators to innovate and differentiate

The diagram in **Figure 98** illustrates how each strategic action creates improved outcomes for passengers and the nation.

Figure 98: Relationship of Strategic Actions to Customer Needs

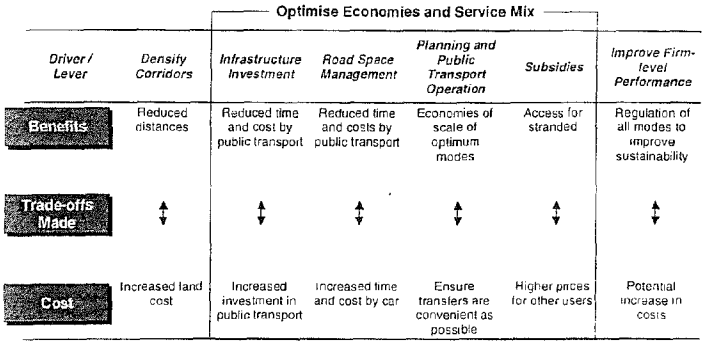


From the customer segment perspective, the proposed strategy delivers a significant positive impact on all the gaps, but especially safety (for all segments), affordability, and availability (for the Stranded and Survival segments). In some cases – for example, affordability for the Stubborn segment – the strategy makes a trade-off against the interests of one customer group. Impact on travel times, for instance, will also differ by segment, though on an overall basis this key customer requirement will improve.

This sort of choice is the very essence of strategy. Indeed, the urban strategy makes many trade-offs within each of the drivers addressed. So the effort to create corridors will reduce distances and increase trip densities, but will require higher land purchase costs because of an emphasis on infilling corridors rather than buying land that costs less by virtue of its distance from the very nodes the strategy seeks to build on. Similarly, road space management efforts will reduce journey times for public transport customers, but likely increase them for private car owners. Creating high volume line haul carriers along corridors will improve costs and service along the corridors, but will likely reduce convenience for passengers who need to transfer[29]. The full range of the tradeoffs is elaborated in **Figure 99** below.

[29] The increased inconvenience can also be viewed as an incentive for individuals to move to corridor locations, where convenience would be superior to that experienced whilst living on the urban fringe

Figure 99: Trade-Offs in the Urban Strategy

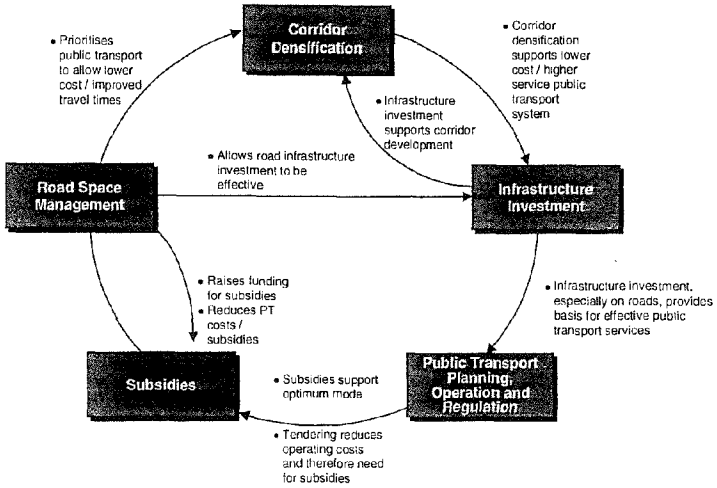


Obstacles to Implementation

Implementation of the strategy depends critically on the accomplishment of all the strategic actions, which tend to have a consistent and mutually reinforcing effect. Not only must all the actions be implemented in parallel to achieve the vision, but they must cover all urban areas to have the desired effect. Otherwise, some metro areas will continue to benefit from the old strategy while other cities apply the new framework and vision. Even more important is the need for uniform application, especially of land use integration, of the strategic actions within all jurisdictions of an urban area. **Figure 100** displays a diagram that demonstrates the mutually reinforcing character of the actions to address the drivers.

Because of this need to implement strategic actions in parallel and in a somewhat uniform fashion – though tactical choices will vary widely across jurisdictions – the implementation process will present multiple obstacles. Most importantly, the success of the strategy is dependent on cooperation between levels of government across all three strategic actions. The majority of responsibility for implementation sits at the level of the Transport Authority, but National government must play a role in terms of setting the vision, creating legislation, describing appropriate guidelines, and – especially – making available funding to help accomplish the strategy. The strategy requires integration and coordination of actions to address all the strategic challenges facing the urban transport system.

Figure 100: Interaction of the Urban Strategic Actions



- *Corridor Densification*: National government retains responsibility for the overall transport strategy, housing investment policies, and legislation and guidelines for implementation. Transport Authorities retain specific responsibility for corridor planning and which controls and incentives are used to enhance the drive towards corridors. This requires a high degree of integrated planning between the two governmental bodies.
- *Optimising Economics and Service Mix*:
  - *Infrastructure Investment*: national government retains authority over the strategy, national roads investment, and commuter rail[30], while TAs take responsibility for local roads and intermodal transfer facilities. Integration in this sphere is critical, since national roads are such an integral part of all urban infrastructure, and moreso still in the context of a road-based corridor.
  - *Public Transport Operation & Regulation*: National government sets the strategy and issues the broad guidelines, but TAs perform the actual tendering, regulation, and administration of local subsidy. In this realm, the National government will influence policy through the flow of funds, particularly subsidy funding. This process requires slightly less integration, therefore, than others.
  - *Road Space Management:* as for the other drivers, National government sets the overall strategic vision, funds and administers the national roads, and issues legislation and guidelines for other entities. The local TA retains final responsibility for local roads and parking charges and enforcement coordination, but much of the activity will be dependent on integrated action by the two entities. In the realm of

[30] Commuter rail responsibility will transfer later to the relevant Transport Authorities.

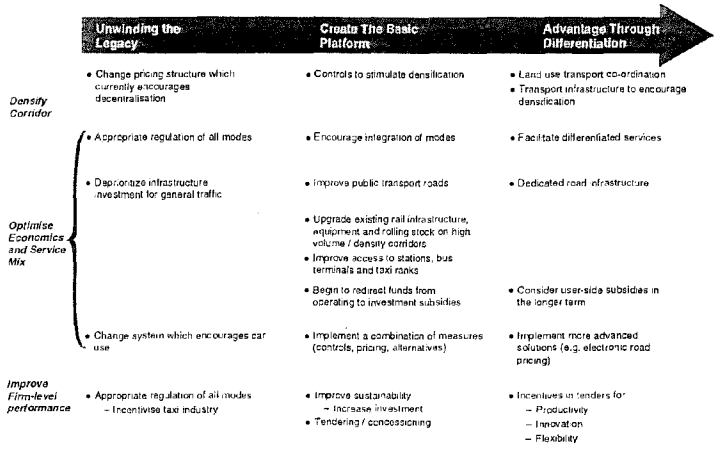
roads, in particular, road space management for only some areas and not others could create a patchwork of incentives and regulations that will ultimately undermine the entire strategy.

- *Subsidies:* National government has a direct lever for change with subsidies, and it must use these as a way to create a shared vision and set of priorities with the TAs, which will have final regulatory responsibility over buses and taxis, for example through the tendering process.

- *Improving Firm-Level Performance*: National government sets the strategy, develops the required legislation and issues the broad guidelines, but TAs perform the actual tendering and are responsible for day-to-day regulation.

Perhaps the most substantial short-term obstacle to implementation is the lack of institutional capacity, especially at the local levels. This manifests itself in the realm of land use and transport planning, tendering and contract management, and setting and promulgating regulations. All of these functions are significantly different from the traditional transport administration capabilities that were required under the previous strategy. **Figure 101** details additional significant implementation obstacles to the success of the strategy, ranging from technological barriers to road space charging to funding shortfalls. If the obstacles are tackled systematically and with a knowledge of their existence in advance, the strategy can not only succeed but also create the capacity to reinvent itself and build on the platform that it develops. Many of these obstacles originate in the apartheid legacy, and it is these that create the unwind agenda that is the important starting point for reorienting the urban transport system to meet a new set of national objectives.

Figure 101: Implementation Obstacles to the Urban Strategy



11. STRATEGY RECOMMENDATIONS: TOURIST / LONG-DISTANCE CUSTOMERS

The situational analysis examined three other passenger groups: tourist and long-distance passengers, rural passengers, and special needs passengers. The next three sections will apply the general principles of the strategy to these passenger groups to provide some general guidelines for strategic action. In two areas, rural passengers and special needs passengers, additional primary data research is still required and still ongoing in an effort to define the customer needs (in the case of special needs passengers) and the extent of the need (in the case of rural passengers). Thus, this portion of the strategy focuses more on a general application of principles articulated elsewhere in the strategy then on the specific strategic actions for each category.

Tourist and Long-Distance Passengers: Overview

Phase 2 of Moving South Africa prioritised tourists as the leading edge customers of this segment and therefore the focus of the strategy. This decision was based on the stated national goal to grow tourist travel substantially and the potential capacity expansion implications. It also developed from the understanding that international tourists, with exposure to a variety of international options, were the most demanding customers in the segment and therefore most likely to define the needs of the future.

Principal Customer Needs

The findings of the situational analysis revealed a system that is meeting customer needs in a satisfactory fashion already. This segment demonstrated higher satisfaction levels with transport than any other except rural. The principal issues emerging from the tourist and long-distance segment centered on future needs, particularly as South Africa acts on its publicly declared commitment to raise the contribution of tourism to GDP and job growth in the country:

- The need for more direction from the tourism sector about where to add capacity and for which segments, and
- The ability to meet future capacity requirements and the related issue of the sustainability of some of the players in the industry (and whether they will be able to provide the needed capacity).

These key strategic challenges revolve around the national objective of promoting tourism development. The resulting transport vision sees a system that is responsive to customer needs (at improving service levels), is flexible in providing needed capacity and therefore able to create tailored systems for customers who need them, does not become a bottleneck on tourism growth, and is sustainable over the long term.

Relationship of Tourism Strategy to Transport

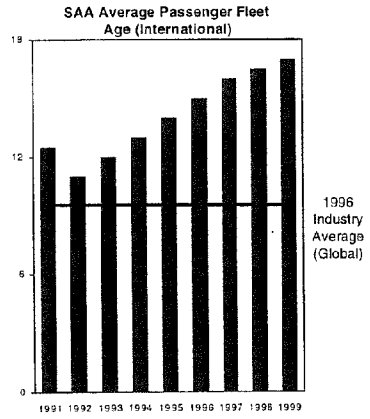
The situational analysis demonstrated that there are still insufficiently clear impulses from the tourism sector about the location and target of expected growth in tourism. While the national goal is stated as reaching global average levels of tourism as a percentage of GDP, South Africa has already reached this level in international tourism. The real opportunity for growth, as such, lies in the development of domestic tourism.

The transport sector needs to understand in advance the target customers, because infrastructure in airports and other tourist facilities require long planning lead times and substantial capital. New road construction is one example, especially if the target becomes the expansion of domestic tourism. Depending on the strategy selected, for example a high end international strategy, very little would be needed in the way of new infrastructure. However, if the country chooses a more jobs-intensive mass market strategy, new capacity will be needed at selected airports, in the coach industry, and along selected strategic tourism roads. Until these choices are made upstream, however, it is difficult to predict the needs.

Provider Sustainability and Meeting Future Capacity Requirements

The situational analysis found some concern about the sustainability of SAA, which was not generating sufficient capital to cover reinvestment for replacement of existing assets. This fact calls into question its ability to invest to cover an expected 6% annual increase in the number of arrivals. While Transnet is actively seeking a strategic equity or alliance partner for SAA, longer term questions persist about the airline's long term sustainability (see **Figure 102**). In itself, the sustainability is not a problem, since many airlines service international routes into the country in addition to SAA.

Figure 102: Indicators of SAA International Sustainability



Note: Excludes 1998 equipment acquisition
Source: SAA, IATA

The bigger problem emerges when SAA exerts influence through the bilateral agreements to limit capacity on routes where it is less competitive than its foreign counterparts. This

behaviour sets up a situation which ultimately pits the firm-level interest against the national interest (to bring in as many foreign arrivals as possible). Thus, the bilateral agreement structure itself becomes an important support to the sustainability of the industry while restricting its ability to import tourists.

Tourism and Long-Distance Passenger Action

Other aspects of the strategy, particularly freight and urban, have concentrated foremost on building density on the system. The tourist-facing segment does not face the same imperative, however. As in maritime shipping, aviation is a globally-linked, competitive business, where densities are already high and scale economies, in many cases, already exist. Thus, the range of strategic actions begins with raising productivity. Three kinds of actions are required:

1. *Actions which will improve firm-level competitiveness by **raising productivity**, or removing obstacles to their improvement,* for example releasing the transport system from funding national objectives which are outdated or sustainable, or fund them directly from the fiscus. This stream of actions is consistent with the view expressed above of transport fulfilling a role as a low-cost enabler of job creation elsewhere in the economy.

2. *Actions which will improve the **flexibility** of the system and its ability to meet current differentiated customer needs (differentiated on either scope, service, or customer segment).* For example:
   - Create specialised systems which are tailored to specific customer needs
   - Upgrade intermodal, customer service, and skills capabilities

3. *Actions which will build the platform off which further improvements and differentiation will be driven, including:*
   - Build the system around the strategy
   - Define benefit flows in the system amongst customers, providers, investors, etc.
   - Remove obstacles to achieving the vision

   This category of actions ensures that the strategy continues in the long-term, and that once the government has fixed the signaling and removed the blockages (e.g. bilateral agreements), the actors within the transport system can effect the necessary change and upgrading themselves.

Tourist and Long-Distance Passenger Strategy: Actions Required

Solutions for the tourist and long-distance segment are similar to those for the freight segment, insofar as it must operate in a low cost, high reliability fashion. As in freight, it must enable global competitiveness, and, as in freight, the tourist system ought to be able to be self-sustaining, supporting itself from revenues of customers who have economic, rather than social, objectives.

Lowering systems cost and focusing the scope of the tourist transport network is a critical issue for tourism and long-distance passengers as it is in other transport segments. In particular, if a strategy targeting the expansion of domestic tourism emerges – and this is the area with the most potential for growth on the path to world averages – then a focused network with prioritised roads becomes an essential component. Low systems cost, with resulting low user costs, would be one of the key determinants of success for such a strategy. Thus, it is important to operate with a lower systems cost overall, and a number of actions to improve firm-level efficiencies, particularly at SAA, can and should occur. Other actions at the system level, pertaining to the alignment of road infrastructure provision, also become essential.

An equally urgent imperative in this segment, however, is that of clearing the blockages and improving signaling, so that the system can become self-adjusting to the tourism strategy and avoid long term sustainability crises. Thus, system alignment becomes the objective of the following strategic actions which are common with freight:

- Make transparent the national objectives
- Align tourism strategy and transport strategy
- Focus large infrastructure developments
- Create customer-facing systems
- Build system integration and customer service skills

Make Transparent Non-transport National Objectives
This action applies particularly to clarifying national objectives as they pertain to the parastatal. As in the freight system, the tourism system should first be aligned to its core mission, providing low cost, highly effective customer service. After this point, the system can then be targeted to serve additional non-transport national priorities. To enable this to happen without detracting from the basic value proposition of the tourism transport system to its customers, such targeting should be:

- Focused on the national objective in a transparent, explicit fashion
- Managed in a manner that does not dilute the signals of value and innovation in the system, nor hamper the implementation of the core strategy. The pursuit of national objectives should not, for instance, introduce distorted pricing that reflects true cost plus other social objectives mixed in. Such 'social pricing' should be clear and transparent
- Funded by the 'customer' ministry if not wholly, at least in part, with the source of funds matching the application to which it is put. Simply put, if a ministry or department needs the transport system to perform a non-core function, then responsibility for funding it should fall outside the transport system
- Time-specific, in line with the expected timeline for achieving the objective. The government should not place open-ended, non-measurable requirements on the system.

- Monitored and reviewed regularly. The transport system's accomplishment of non-core objectives should be subjected to the same regular review and scrutiny that its core performance will be.

Align tourism and transport strategies

To ensure that the tourism system meets the needs of its principal customers, transport and tourism strategies will need to be more closely integrated. In particular, two key mechanisms must be in place to create the desired strategic outcomes:

- Make explicit the goals and target segments of the tourism strategy. The tourism sector must make choices, upstream of transport, about which customers are to be served, at what level of service, and where in South Africa or the SADC region. Just as the transport strategy focuses in an effort to create density and improve service, the tourism strategy must be equally specific about where the focus will be. It cannot simply send a message to transport that does not reflect prioritisation and targeting, or the system will not be able to provide needed capacity. Transport must be a part of this consultative process, but the selection must be led by participants in the tourism sector.

- Determine the locations and consequent capacity requirements that follow from the tourism strategy target segments. Once a tourism strategy determines a focus, for example, on a mass market strategy for a particular area of the country, then the transport sector must determine the required capacity expansion for that area.

Focus large infrastructure developments

Large infrastructure developments are key system drivers in tourism, too, because of the high fixed costs involved, their long-term impact in determining the overall level of cost in the system. As such:

- Large infrastructural decisions need to be aligned to the tourism strategy, focusing investments around the locations that result from tourism targeting, and not investing in assets, like some roads, with little tourism or long-distance passenger potential.

- Large infrastructural decisions need to be coordinated among modes, especially within a tourist corridor. Otherwise, the system will not meet the objective of seamless global tourism service. One example is that of coordinating road infrastructure with airport expansion decisions.

As a consequence of this portion of the strategic actions, tourism infrastructure providers will need to be able to collaborate to control and direct large infrastructure developments which could have system effects, especially the National Roads Agency and the Airports

Company of South Africa. Unfortunately, no such overall coordinating mechanism exists today.

Create customer-facing systems

The tourism transport network, like the freight network, must be aligned around the needs of specific segments of identifiable customers, and must be allowed to reach self-sufficiency. This is already happening in the system, for example, the Airports Company of South Africa is increasingly responding to needs of customers and providing additional capacity at key bottlenecks. To ensure this happens throughout the tourism system, transport must:

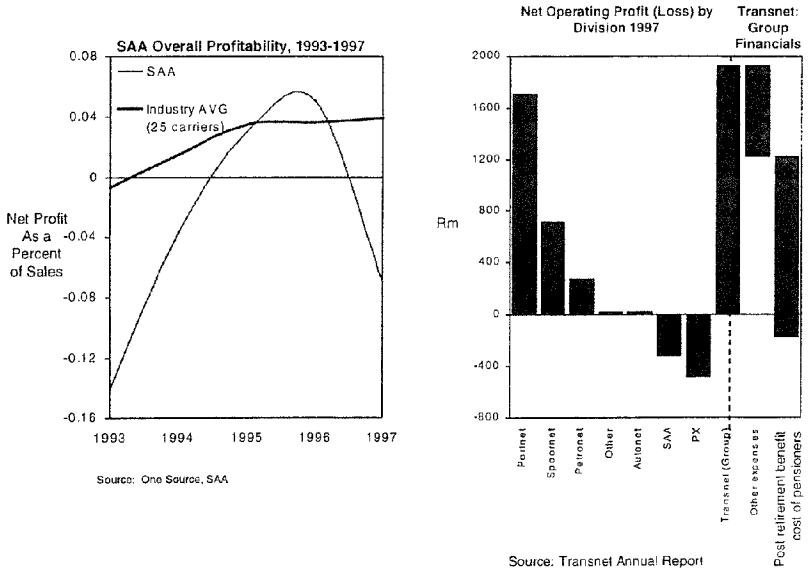
- Charge customers the full costs of the entire transport system used, including operations, infrastructure, and externalities.[31] Only full cost charging will create the proper signaling of value and encourage rational decision-making at the firm level, and rational use of resources. Moreover, it ensures sustainability.

- Ring-fence financing, and match sources and applications of funds. This also ensures sustainability by allowing customers to pay for the value they can support, if the application of funds is ring-fenced to the customer segment which benefits. The principle of ring-fencing also implies that shared infrastructure – in this case in the form of roads for tourist travel – must be split proportionately to assign appropriate costs to different segments of users.

  The ring-fencing principle operates in sharp contrast to the current situation, where cross-funding in Transnet creates capital expenditure shortfalls and rewards some customer segments over others (**Figure 103**). For example, SAA is currently insulated from the consequences of its own performance, since its operations are supported by Transnet profits elsewhere in the firm.

[31] Externalities in the tourism context relate primarily to jet noise, and also to safety and other road-based issues from hired cars or coaches

Figure 103: SAA and Transnet Profitability



- Pricing mechanisms to signal value in accurate and transparent fashion. Prices must reflect the cost of a service being delivered to the end customer segment, without including costs of other benefits to other customers.

- Reinvest profits into customer-based infrastructure and firm level efficiencies to meet future needs. Profits should be reinvested in systems that continue to create and upgrade value for the customers.

- If profits from one segment are to be used to invest in other segments, do so transparently. This could occur between tourist passengers and domestic long-distance passengers.

Build System Integration and Customer Service Capabilities

The tourist system must build capabilities to integrate across the system for customer groups and, as important, improve customer service capabilities. Any tourism strategy that targets either mass market international tourists or any high end tourists – originating domestically or internationally – will require a globally competitive service component. This, in turn, requires investments now in providing specific skill sets for customer service and logistics, including, for example, scheduling coach services or assembling seamless transfer and distribution packages from airports.

Mode-Specific Actions and Choices

At a modal level, the system-wide actions translate into very specific strategic actions, and a set of corresponding tactical choices.

Strategic Actions in Air Operations

Several key strategic actions are required in order to enable the system to attract as many tourist customers as possible, provide competitive levels of customer service, and not create a bottleneck on tourism growth.

- *Remove capacity constraints on the aviation system and clear the signaling blockages.* This step encompasses several actions, including:
  - In the short term, continue to license charter carriers and others that can increase the number of available seats into South Africa in response to demand growth from key external markets. This action will need to strike a balance this with the sustainability of scheduled carriers.
  - In the longer term, over the 20 year horizon of the strategy, move towards open skies agreements to ensure that sufficient capacity on scheduled carriers is available to meet demand. NDOT has already started in this direction, and these actions should ultimately allow carriers to reach optimal scale on their routes.

- *Ring-fence airlines to ensure sustainability.* Allowing airlines, especially SAA to be sustainable, is a key objective of the strategy. Ring-fencing the financial operations of the airlines permits them to be economically self-sufficient, and creates an incentive for the shareholders to take measures that will improve operational efficiencies. This will make more transparent the ability to raise and fund needed fleet upgrading and capital expansions.

- *Remove barriers to attaining cost efficiencies,* especially if there are embedded national objectives that are not transparent which are raising costs in the system and hurting carriers' ability to compete globally.

- *Improve operating efficiencies.* International benchmarking from the situational analysis demonstrated that South African carriers operate from a inferior cost position than international competitors[32]. Most of the required actions to address this fall into the domain of the firms themselves, in conjunction with the other actions which should create a platform from which to improve operating productivity.

Strategic Actions in Aviation Infrastructure

The situational analysis found the capacity planning and profitability of the Airports Company of South Africa to be sufficient to meet future needs, although current spending

[32] Merill Lynch, 1997

as a percentage of required capital replacement was low. Strategic actions in this mode focus primarily on needed capacity and externality minimisation:

- *In conjunction with the tourism strategy, identify which airports are to be the principal hubs for specific segments in the future.* Once these decisions have been made, invest, for example, in capacity expansion and landside distribution systems for the mass market airports. and in service improvements for the high end airports. These investments should also be paired with corresponding investments in coach capacity and car hire capacity. Plan needed capacity increases early, to allow time to assemble land parcels for new facilities, if required. Airport investments must also incorporate planned expansion in air freight capacity and operations.

- *Co-ordinate upgrades to air navigation safety with SADC.* While aviation safety is high in South Africa, the situational analysis revealed substandard safety levels in air traffic control in other parts of sub-Saharan Africa. As the tourism strategy will be integrated with other SADC countries, so, too, should the air safety system.

- *Charge carriers for externalities.* To avoid any future problems emanating from jet noise, airport landing pricing mechanisms should include consideration of the costs of mitigating externalities in order to make the economics fully self-sufficient and transparent and create the proper incentives.

Strategic Actions in Road Infrastructure and Operations

Depending on the tourism strategy selected, the road network could become a critical part of delivery. Any strategy that targets mass market, coach-dependent tourism, for example, or independent fly-drive tourists will require a high quality road network. Strategic actions that follow from this are:

- *Define the strategic tourism network.* In conjunction with the tourism strategy for different customer segments and different destinations, identify which roads will be critical to tourism growth. This must be done in a consultative fashion with the tourism sector participants, the provinces, coach providers, and airports.

- *Manage road infrastructure investment.* Consistent with the definition of a strategic tourism network, the resulting investment patterns should differentiate the level of spending depending on the importance of the road to the tourism strategy.
  - Ensure adequate funding to handle increased capacity on the strategic network at good quality levels with a high attention to safety. Examples of priority roads could be those from airports to CBDs or from airports to key tourism destinations, depending on the tourism strategy.

  - Increase the level of overall funding available to the roads network to reverse the trend of decline.
  - Reduce performance requirements for long-distance roads with no freight, long-distance passenger, or tourist priority. Fund them accordingly, maintain to an adequate quality level, but focus investment on the priority roads.

- *Charge road users for road use and externalities.* Tourist and long-distance passengers must be treated as freight customers, in order to coherently restore full costing to the road system and create the proper signaling of economic value. Over the twenty year horizon of the strategy, technology should enable direct road user charging. In the shorter term, however, the strategy must:
  - Determine the role of the fuel tax, as is required for the freight road system. Depending on the decision of who captures these funds (transport or the general fiscus), other mechanisms may be used to capture road charges from tourist and long-distance passengers. Choosing the appropriate mechanism becomes a tactical choice.
  - Allocate responsibility for externality costs and charge them through. This is particularly important for safety, which tourists rated as their primary concern, above all others. Only by fully charging through can safety be fully assured.
  - Enhance enforcement efforts on the roads, to create a safer traveling environment for tourists.

Tourism Passengers Summary

Taken as a whole, these strategic actions will enhance the ability of the system to expand its capacity to meet future demand. If tourism is to be a job-creation engine of the future for South Africa, however, the transport sector will first need a guiding direction from the tourism sector in order to prevent it from becoming a bottleneck on development.

12. STRATEGY RECOMMENDATIONS: RURAL CUSTOMERS

Results of the Situational Analysis and Absence of Data

The rural passenger situation analysis focused on road infrastructure, rather than operations. This emphasis was deliberate, based on the White Paper commitment to expanding access, and the operating cost improvement that better roads will provide for rural operators. In addition, rural roads are one piece of a larger infrastructural package that rural areas require. And without roads, analysis of providers' operations is wasted.

In addition, the situational analysis for rural passengers revealed a customer group that was largely satisfied with current levels of service, despite a situation in which many rural communities lacked quality level 4 road access to the main road network. This lack of access increases travel times and makes it more difficult for rural communities to integrate with the larger society.

However, the research also suggested that most rural communities are not agriculturally-driven *per se*, as a result of the legacy of highly distorted apartheid era land tenure patterns. As a result, the principal reason and economic justification for building roads to rural communities – to enable subsistence and other farmers to get goods to market – is largely inapplicable in South Africa[33]. Indeed, work done for the Rural Infrastructure Investment Framework (RIIF) indicates that communities with a primary economic base in commercial farming are relatively well served by level four access roads. The most crippling problem in the situational analysis was the complete absence of reliable data on road needs in rural communities; estimates varied by over 120% and the estimated cost to address the problem ranges from R3 billion to R17 billion.

Thus, the basic question posed by the results of the situation analysis becomes:

> *To what extent should the strategy invest in providing basic access roads, and which communities should receive priority?*

Answering this question will provide the vision to guide the rural road portion of the strategy.

However, answering the question is difficult in the absence of clear data regarding need and development levels of rural communities. One of the underlying principles of the strategy is to make decisions on the basis of data-driven research. The lack of consistent data on rural roads adequacy presented a real problem for the strategy, forcing MSA to choose between the need to be comprehensive and include rural areas within the overall decision framework, and the unbreakable principle of making decisions based on hard facts.

[33] Roads to commercial farm areas already exist, in general, and are highly effective in getting goods to market. As a result, the marginal utility of a road to other areas to unlock purely agricultural potential becomes much more limited

The MSA strategy offers two responses to this situation. One is to develop more data, and the second is to apply the general strategic principles developed in other parts of the strategy to the rural situation once the data are developed.

Developing Additional Data to Inform Choice
First, in response to the data void, Moving South Africa commissioned additional research in Eastern Cape province and Mpumalanga province to act as demonstration projects to assess the true level of need for road improvements and to apply a framework based on development potential. These studies build on a framework modified from an earlier study, the CARNS report, performed in Kwa-Zulu/ Natal province. This first CARNS study observed that the actual amount of needed roads, based on community consultation, was about 65% of the amount previously estimated. In the second CARNS report, for the Eastern Cape, findings were more dramatic: only 50% of the gravel access roads believed to be necessary previously were actually identified as important.

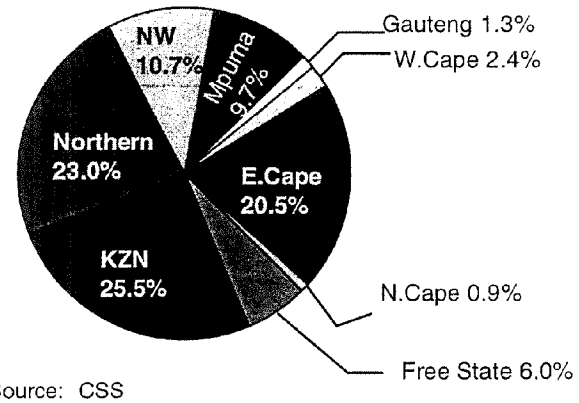
The CARNS framework examines roads and community development levels, and assigns a priority value on the basis of the existing level of development in an area. The criteria include:

- *Development Potential* (for agriculture): communities with a higher presence of natural water resources, better terrain conditions, and good agricultural conditions score higher. In the modified Eastern Cape framework, additional potential for agro-forestry employment, tourism employment, or general job creation enables a higher score, too.
- *Population Size*: higher population communities score better
- *Accessibility*: communities with higher population density and higher road densities (road km per square kilometer) score higher
- *Community Development Potential*: communities with higher life expectancies, better education levels, and higher income levels score better

CARNS weights the first two factors more highly, in an effort to ensure that roads investment is linked to community sustainability and development, and the modified study in Eastern Cape introduces a new element: differentiation among communities on the basis of a their existing levels of access and existing levels of development. Also, the new approach allows for a decision *not* to invest

The Eastern Cape application of the CARNS study finished in August of 1998, and confirmed many of the trends first identified in KwaZulu/Natal. With the completion of the Eastern Cape study, combined with the earlier CARNS study from KZN, NDOT is now in possession of data about provinces which represent over 45% of the total rural population. Continued data gathering along this trajectory will then allow NDOT and the provinces to be in a better position to create and act on specific recommendations. **Figure 104** below illustrates the breakdown of the South African rural population by province.

Figure 104: Rural Population by Province, 1995



Source: CSS

Once the complete demonstration project data have been gathered, MSA recommends that the CARNS approach be rolled out on a national scale to determine which roads are needed in which communities on a national basis. The creation of a national rural roads database, taken alone, will constitute a significant advance in solving the problem of basic access, and create the platform for applying the general strategic principles.

Finally, the two CARNS studies suggest some greater precision in framing the cost of the rural road access problem. When combined, the two provinces account for 45% of the rural population, and the studies – based on differing per kilometer construction costs – estimate a total cost of about R2 billion to reconstruct or build the necessary level four roads in Eastern Cape and KZN Provinces. MSA estimates, extrapolating from this number, suggest that the provision of rural access roads to all communities that meet the CARNS criteria would cost in the range of R5 – 6 billion. It is important to note that this figure is for construction *alone*, and does not include the 10-year maintenance costs, which are calculated as a part of the original sizing range of R3 – 17 billion.

Strategic Principles Applied to Rural Roads

The fundamental issue that the strategy addresses is that of accessibility. Many communities lack sufficient access to the main road network and therefore are prohibited from full social integration with the remainder of South African society. Within accessibility, the strategy focuses on the provision of, or rebuilding of, level four access roads to higher quality. The general logic of the approach is to improve the road quality and establish a connection to the level three network. In doing so, the strategy can make

rural transport both more accessible and somewhat more affordable, by reducing operating costs for road-based providers like taxis and buses.

Unlike in the freight or urban sectors, however, the land tenure pattern inherited from apartheid prohibits substantial amounts of densification of the networks to improve the systems cost and utilisation levels of roads. Indeed, rural areas by definition are scattered, low density assets. This will, in turn, prevent the system from realising large savings in system costs due to higher operating efficiencies for operators. The emphasis within the strategy thus shifts from changing the modal economics to providing the required infrastructure. And in this realm, other principles of the strategy apply to the rural sector.

The strategy for rural transport is grounded on three principles:

1. Develop a Coordinated Framework Across National Government for Defining Rural Sustainability

Given that most rural communities in South Africa lack a direct connection to economically sustainable agricultural activity[34], it is important to first address issues of community sustainability. Before investing in large amounts of infrastructure in rural communities – in transport, health care, education, water, and other services – there is a need for a coordinated national framework. The Department of Constitutional Development has created one such approach, the RIIF (Rural Infrastructure Investment Framework), which should be used as a basis for future efforts. So before investing in rural community infrastructure, decisions must be made in the larger context of overall sustainability. Having prioritised more sustainable communities, the strategy must then invest in them, coordinated with other non-transport infrastructure in order to provide maximum benefit to the community and create economies of scale in investment, if possible.

2. Fund Social or Non-economic Infrastructure in a Transparent Fashion

Because many South African rural communities do not have long-term agricultural sustainability, roads to many communities will not prove to be self-sufficient in terms of generating an economic return in the way that roads for freight customers or tourist customers will. This dynamic could change, depending on rural development strategies and their emphasis on, for example, agro-forestry or tourism development. Consequently, some roads will create an economic return, recoverable through user charging, but many may not. As a result, the strategy requires explicit and transparent national objectives, to guide the provision of rural road access. Any actions to address the problem should therefore:

[34] Only 13% of South Africans, according to the World Bank (1992), depend *directly* on agriculture for their primary income. However, this figure understates the number of those with an indirect relationship to the agricultural economy. Nonetheless, this figure is substantially lower than for comparable countries at similar income levels.

- Identify which roads can be self-sustaining and create sufficiently high levels of internal economic returns
  - Fund the upgrade of these access roads through full user charging, including internalisation of externality costs
  - Take into account quality of the formal road network connected to

- Identify which roads are primarily "developmental" in character and cannot create sufficient economic return to be self-sustaining
  - Prioritise developmental roads according to the enhanced CARNS framework and other national objectives, taking into account the quality of the formal road network to which the roads connect
  - Fund developmental access roads through transparent mechanisms that reflect national objectives
  - Create explicit funding sources for developmental roads that do not compete with funding for other roads, both rural and in the rest of the network. Work with other relevant 'customer' departments to support roads that fulfill other developmental objectives (e.g. agriculture, land use)

- Make investments time-specific, in line with the expected timeline for achieving the social access objective. The government should not place open-ended, un-measurable requirements on the system.

- Monitor and review social road investments regularly for performance against the access objectives.

3. Establish better data on the degree of needs for access roads

This is an essential first step in understanding the problem. Without this, any attempt will be meaningless and based on opinion, rather than fact, in contravention of one of the guiding principles of the strategy. This process has already begun with the application of the CARNS framework to the Eastern Cape province, and it now covers over 45% of the rural population. However, this approach must be extended to the remaining seven provinces to ensure that decisions are based on the facts on the ground.

13. STRATEGY RECOMMENDATIONS: SPECIAL NEEDS CUSTOMERS

Situational Analysis Review

The situational analysis for special needs passenger is still underway, particularly in relation to the identification of specific needs during the seven step travel chain. However, preliminary findings suggested that while the vast majority of this segment were life-cycle passengers (e.g. pregnant women, elderly, children 5-14), the sub-segment with the most differentiated needs were the 2.1 million impairment passengers. For this group, in particular, some degree of additional investment is required to improve infrastructure and vehicles in order to accommodate different disabilities. However, MSA does not have sufficient data yet on the breakdown of these sub-segments by degree of impairment and the consequent degree of modification of transport assets or service required.

The need for improved assets of all kinds emerges at a time when reinvestment levels are already low in almost all modes. This is matched by scarce available capital for upgrading assets, whether in the urban or any other passenger context. NDOT has engaged several pilot studies to identify the cost of meeting the needs of impaired passengers, and results from these pilots will help to inform the ultimate solutions selected. In the absence of further cost and needs data, then, the strategy focuses on applying general principles to the situation of special needs passengers.

The key strategic challenge identified in the Phase 2 work centred on balancing the cost of improvements required to make the system accessible with the national objective and customer objective to provide full access on the basis of equal risk and opportunity.

Strategic Actions

MSA recommends four tiers of strategic actions to address the needs of special needs passengers and to enable the trade-offs between system cost and full unencumbered access. These actions are:

Develop a Common Set of Objectives

To set a vision for this segment requires co-ordinated activities and initiatives across government and with civil society organisations. The effort must produce an outcome that propagates a vision not just for transport but for all of the services which transport enables (e.g. health, employment, education, etc) in order to inform the range of needs that transport must fulfill. This process is already underway under the aegis of the Office of the Deputy President.

Complete the Data Gathering Effort

Much data is still required in order to make an informed choice about the trade-offs. The joint team is currently working to fill in the data gaps at all points in the transport chain and for the major categories of special needs users. NDOT pilot projects will complement these efforts, giving a more complete picture of the options and their cost to implement.

Identify and Allocate the Additional Costs of Serving Special Needs Passengers

Some segments of the special needs passenger group will be served simply by upgrading the public transport system and the road network for all passengers. This is true principally for many in the Life-Cycle segment, e.g. children 5 - 14. Other segments, like the Impairment Segment or the Signage segment, will require specific additional upgrades to the assets in the system above and beyond what might otherwise be required for the general passenger public.

- The strategy must identify what these additional costs would be, and then provide transparent funding mechanisms to make these segment-specific upgrades over the twenty year horizon of the project. The funding must take into account the trade-offs in meeting the needs of all customers, whether against service, fleet age, or user prices for non-special needs users.

- Having identified the costs and the trade-offs, an institution must be given decision rights to determine the basis for allocating responsibilities for funding. Possible sources of the additional funding required include other users who do not have special needs, operators and infrastructure providers – in the form of lower returns, reinvestment levels across the system, or other government departments with an interest in meeting the requirements of special needs passengers.

Incorporate Requirements into Overall Vision for Public Transport Infrastructure and Operations

The fact that the transport system already needs to upgrade its assets offers an opportunity to incorporate the vision of equal access into the overall passenger vision. The most comprehensive way to do this is through requirements within the overall tendering and concessioning agreements, which should incorporate provisions for the adoption – over time – of infrastructure and operational assets that meet the specific needs of special needs passengers.

14. STRATEGY RECOMMENDATIONS: EXTERNALITIES

Situational Analysis Review

The situational analysis revealed high levels of externality costs generated by the transport system being pushed out into society. A significant source of these costs are road-based accidents and fatalities. But MSA forecasts suggest that, if left unchecked, the primary problem in 2020 will be urban environmental degradation and congestion, largely resulting from an inexorable increase in the tendency to own and use cars in South Africa.

Road safety, in particular, registers as a current concern for two sets of passengers: urban passengers (across all segments), and tourist and long-distance passengers. Both of these groups rated safety at or near the top of customer needs. In the urban customer group, especially, the threat of unsafe transport registered as a source of dissatisfaction with the system. Tourism passengers, in contrast, rated safety high as a potential deterrent to visiting South Africa. Road safety imposes enormous costs on society, making the transport system inherently unsustainable. The total cost of all road accident to society reached almost R12 billion. Only 56% of the costs are borne by the responsible vehicle operators, since insurance is not universal. This destabilises the long-term sustainability of transport and depresses usage levels through fear of poor safety.

Although government has made some consistent efforts to address the safety problems in the areas of education and awareness, progress has been curtailed by a highly fragmented enforcement system. 485 separate governmental entities hold some responsibility for enforcement on the roads, but use different standards for fines, speed limits, or heavy vehicle checking. This patchwork system, combined with several other factors like non-uniform insurance coverage and limited effectiveness of the criminal justice system, creates an overall mis-alignment of risk, where the users creating costs in the system do not bear a corresponding probability of having to cover those costs. One example of this is the historic mechanism for funding the Road Accident Fund, which has been financed by a portion of the fuel tax, regardless of the payer's driving record or of whether the payer is even using the road network at all. An additional factor that exacerbates the problem is the devolution of power to nine provinces under the new Constitution. Only a few of the provinces have budgets sufficient to fund even basic enforcement levels, and many lack the support from further back in the national enforcement chain – in the judicial system or at the prosecutorial level – to make the enforcement on the road 'stick'. Even KwaZulu-Natal, the province with the best funded effort to enforce heavy truck loading, experiences a minimum 35% rate of overloading on its roads, due to shortfalls in funding and other priorities competing with road safety enforcement.

The environmental problem is not yet acute, and this presents South Africa with an opportunity found in few other parts of the strategy: to get out in front of a problem and take preventive, rather than reactive, measures. The principal obstacle to solving the

problem is a dearth of data on the current environmental consequences of transport. Although the Department of Minerals and Energy is working on aspects of the issue, it is clear that more research will be required in order to better understand the current and future impact, particularly of road vehicle emissions, on air quality. However, based on the experience of other countries which are further down the path of environmental degradation, the drivers of the problem in the future are already well-known. The principal causes are car usage, congestion, and, to a lesser extent, heavy vehicle usage.

Thus, with both safety and environmental degradation, there is the potential to impose an enormous unfunded liability on the rest of South African society if nothing is done to address the causes.

Strategic Actions

The MSA strategy to address these problems focuses on two principal priorities: internalising externality costs, and creating institutional alignment. By internalising costs through user charging or other mechanisms, the strategy addresses the issues of risk alignment and long-term sustainability. By creating better institutional alignment, the strategy attacks the issues of enforcement – thereby also changing the balance of risk alignment – and capacity. Both sets of measures apply principally to road usage, since it is the cause of the vast majority of externalities.

Internalise Externality Costs

This leg of the strategy encompasses three sets of distinct but related actions.

- *Charge road users for road use and externalities.* By passing on the full cost of using the roads, users will make more economically rational decisions about when and whether to use the road system. This step will restore more rational signaling and inherently charge for the risks created on the roads. This will also have the benefit of reducing road congestion and attendant pollution by encouraging car users to migrate to public transport sooner, and it keeps the road network sustainable and self-sufficient. Over the twenty year horizon of the strategy, technological advances should emerge to make actual *in situ* road charging feasible, but a number of other measures must also be a part of the package:
  - *Determine the role of the fuel tax.* If the fuel tax is the user charge and is ring-fenced to the road network, then most of the cost of road construction and maintenance is already covered. However, externality costs are not, in the present formulation, and so must be added into the calculus. If the fuel tax is a general tax, then another, more transparent mechanism must be developed to allocate funds back to the road network and externality mitigation.
  - *Determine the externality costs to be allocated.* At the moment, NDOT possesses a good understanding of safety costs. However, as noted above, additional data is necessary to determine the level of environmental costs to be included in charging. Various methodologies for doing so exist, and result in vastly differing estimates of environmental cost to be recovered. This must

also be balanced with affordability concerns for operators. A final tactical choice requires a decision on whether to 'charge through' costs of enforcement, as another component of externality minimisation.

- *Allocate responsibility for externality costs.* The transport sector still requires a deeper understanding of externalities and their direct causes; although cars and trucks are responsible for much of the problem, they share responsibility with other vehicles as well. Determining a more precise view of cause and effect is essential to creating an effective user charging regime.

Improve Institutional Alignment: The RTMC Example

This leg of the strategy entails creating structures through which institutions with similar responsibility but different constitutional jurisdictions can create standards that are nationally applicable and, most importantly, establish a vision for promoting safety or minimising externalities. Others purposes are to share information, centralise recording and measuring of progress, set proper risk alignment, and coordinate enforcement efforts nationally.

During the course of the Moving South Africa project, MINCOM mandated a study to explore one model for creating institutional alignment in the form of the Road Traffic Management Corporation (RTMC), charged with responsibility for coordinating road safety. This entity, though not yet fully realised, provides an example of the kind of cross-cutting institutional structure that is required, and several strategic imperatives can be drawn from studying its example and experience thus far.

The Constitution provides a framework for cooperative governance to enable such cross-system decision-making. It sets forth the principle that:

> *"All spheres of government must co-operate with one another in mutual trust and good faith by:*
>
> - *Fostering friendly relations*
> - *Assisting and supporting one another*
> - *Informing one another of, and consulting one another on, matters of common interest*
> - *Coordinating their actions and legislation with one another*
> - *Adhering to agreed principles*
> - *Provide effective, transparent, accountable and coherent government for the Republic as a whole*
> - *Exercise their powers and perform their functions in a manner that does not encroach on the geographical, functional, or institutional integrity of the government in another sphere"*

In addition, road traffic regulation is a Schedule 4 Constitutional Competence, with concurrent National and Provincial responsibilities. The proposed RTMC would adhere to these Constitutional principles by forming a corporatised agency, reporting to a Board of Funders, to address. It is to be run as a business with fines making up most of the

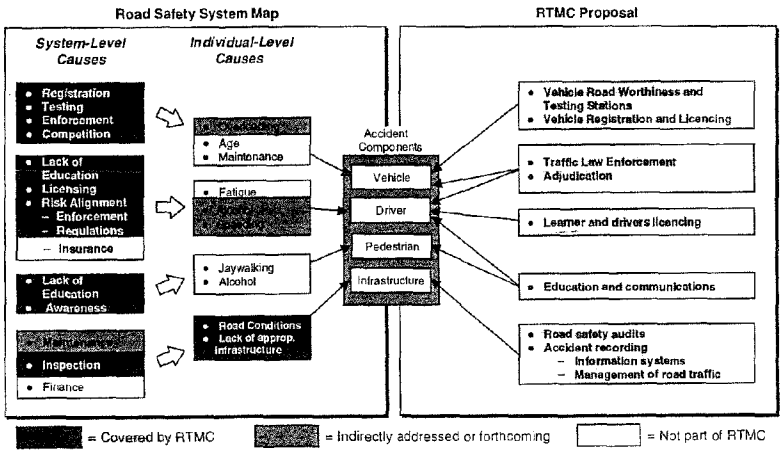
revenues, but is designed as a *voluntary* organisation, with equity contributions made by each of the provinces and the NDOT. Representatives from the 9 provincial transport MECs, the Minister of Transport, and the Road Accident Fund would form the Board.

The mandate for this group covers three main thrusts: agreeing the institutional objectives, establishing a consistent set of road safety rules which will apply nationwide, and pooling the decision rights to enable consistent action across the system. The specific programme includes co-ordination actions in the realms of:

- Vehicles: roadworthiness testing and registration/licensing
- Enforcement: traffic law enforcement standardisation and adjudication
- Licensing: learner and drivers licensing
- Awareness: public education and communications
- Infrastructure: road safety audits and accident recording

Figure 105 illustrates its proposed program of action with respect to the causes of road safety.

Figure 105: RTMC Proposal for Addressing the Causes of Poor Safety



In practice, the RTMC would have the ability to centralise and standardise authority for road safety by tying decision rights to funding. Thus, income from provincial vehicle licensing fees, fines, and the Road Accident Fund will be disbursed to support provincial enforcement, local authorities, overhead and communications, and roads improvements. This combination enables the RTMC to coordinate across jurisdictions, create a single relationship with the adjudication system, set uniform standards and fines, and enhance the effectiveness of enforcement.

Reducing Fragmentation:
The Proposed Road Traffic Management Corporation (RTMC)

Current responsibility for road safety enforcement is fragmented, with 465 local traffic authorities and 83 provincial stations in South Africa applying a variety of different rules. There is a two year process underway to coordinate all of these different agencies through the RTMC.

The mandate-creating process of the RTMC will incorporate the needs of customers and other stakeholders, supplemented by lessons from international best practice structures and processes. The basic objectives of the RTMC were agreed by the Ministerial Conference of Ministers of Transport (MINCOM) in March 1998. In subsequent months, the RTMC task team has undertaken a fact finding mission to investigate international best practices, and produced a draft white paper outlining the proposed objectives, structure, and activities of the RTMC. Following widespread consultation, a final draft of the white paper is expected to be submitted to Cabinet in January 1999, with relevant legislation ready in the first half of the year. The initial staffing for the RTMC is likely to occur in February 1999, and the RTMC should be operational by early 2000.

Funding for the RTMC is proposed to come from NDOT and provincial DOTs, with funds sourced from specific activities which fall within the oversight mandate of the RTMC: licensing; fines collected from enforcement of traffic by-laws; and a contribution from the Road Accident Fund. Current estimates suggest that these funding sources could generate as much as R1.7 bn per annum.

Of this amount, an estimated R900m would be used to pay for enforcement carried out by provincial and local RTMC-accredited agencies. Another R100-200m would be used to fund specific RTMC activities such as education programmes, policy formulation, guideline development, coordination across agencies, and research. Surplus funds would be paid back to stakeholders as a dividend.

Key benefits flowing from the RTMC are reduced fragmentation of responsibility for road safety enforcement, improved levels of enforcement, and consistency of approach.

Although the RTMC, as formulated, does not address some of the key system drivers of road safety performance – most notably private insurance, adequacy of enforcement staffing, and overloading – the approach appears to provide a solid basis for addressing issues of fragmentation and alignment. Another mechanism to address this issue is the NDOT's proposal for an AARTO organisation (Administrative Adjudication of Road Traffic Offenses) to move enforcement out of the criminal courts. In the case of both RTMC and AARTO, final structuring and sign-off are still pending, as this report goes to press.

Improve Institutional Alignment: Strategic Actions

The RTMC provides one example of a set of three strategic actions that are applicable for institutional coordination issues as they pertain to minimising externalities, whether in the realm of safety, environment, or elsewhere. These actions encompass:

- *Establish Clear Goals:* assemble key government and industry players to develop a shared vision and clear objectives for reduced externality levels and the process to achieve them

- *Send Clear Signals to System Users:* after creating a shared vision, disseminating it in a clear fashion becomes the critical task. To accomplish this goal requires:
  - *Coordination of decision rights*, such that all entities participating in co-operative governance are represented in customised, voluntary institutions. These institutions must involve the key players and stakeholders, encourage system thinking and innovation, and control actions that could have a negative impact.
  - *Specific funding tied to decision rights,* requiring members of these voluntary institutions to commit funding that can be used to implement the vision through enforcement, capacity building, or other means. Funding, inasmuch as possible, should be transparent and sourced from system users through user charging and ringfenced to the uses intended.

- *Create Alignment:* in addition to using funding to encourage alignment, two other actions are required.
  - *Set decision rules*, making it possible for organisations that are not directly a part of the voluntary institutions to still enact the strategy. For instance, in externality minimisation, such a rule would relate to full user charging, but leave the specific mechanism, in certain cases, to the governing jurisdiction.
  - *Support with regulations,* where required, to guide the actions of firms and other actors in the sector

Taken together, these strategic actions will create institutions that can implement the vision in a coherent, integrated fashion that reduces the level of fragmentation and improves enforcement and alignment of risk.

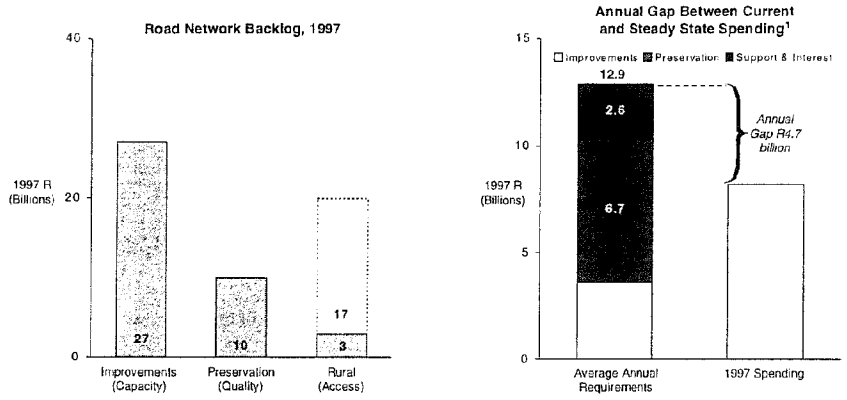
15. STRATEGY RECOMMENDATIONS: ROADS

Roads are an essential component of the transport system and one of the biggest investments by the country in transport infrastructure. Many other sections of the strategy address the road network as it relates to freight customers, rural customers. urban customers, tourism customers, or externality generation. Clearly road assets and operations present one of the truly cross-cutting issues in transport, and this section summarises some of the various strategic principles applied elsewhere in the strategy, thereby addressing the central two issues to emerge from the situational analysis. The two issues cover the sustainability crisis and deterioration of the road network, and the institutional co-ordination implications of fixing the sustainability problem in accord with the vision of the strategy.

Results of the Situational Analysis

The most compelling overall finding was that of a road network in decline. Current spending averages R3.3 billion per annum below needed levels to preserve the network's quality, and this underspending creates additional costs in the system in the form of lower speeds, poorer safety, and increased vehicle wear. **Figure 106** illustrates the road funding gap in more detail.

Figure 106: Under-investment in South African Roads



Note: ¹Spending required to maintain current level of service. Includes national, provincial, local and toll roads, road improvements, preservation and support services
Source: Financial Planning and Co-ordination of Rural Roads 1996; GIBB Africa analysis, MSA analysis

In addition, the analysis revealed very explicit prioritisation of roads for investment or maintenance as a contributing factor to the sustainability problem. The National Roads Agency has expended some time prioritising freight roads, and Western Cape province has also begun to develop road prioritisation frameworks. But any existing frameworks are nascent at best and unco-ordinated across the system as a whole. As a result, most

expenditure for roads goes to maintain the current system rather than to implement a strategic vision for roads.

Another key source of the sustainability problem lies in the critical funding shortfalls and lack of capacity at the provincial level. Northwest Province cannot implement its objective of paving gravel roads due to overheads costing 40-50% of the roads budget. Other provinces lack skilled capacity for planning and targeting (the Free State has one road planner), and still others find road investments competing unsuccessfully with other expenditures like health and education, as in the Eastern Cape. Structural reform is clearly required in some of the Provincial DOTs, and NDOT is working on pilot program with some provinces to generate additional skills and planning capabilities.

The final source of road unsustainability derives from unclear signaling of the economic value of roads and road use. Users do not pay directly for road space usage, but rather indirectly, through the fuel tax, and do not pay for the externality costs generated in any fashion[35]. As a result, users are receiving signals that do not incorporate the full cost of using the road network, essentially underpricing roads. In the long run, this creates additional usage and contributes to the failing sustainability of the system.

As a result, the strategic challenges that emerged from the situational analysis pertain primarily to enhancing the sustainability of the road network. Related to this are the challenges of balancing user costs with accounting for externalities, and the lack of capacity to deliver road infrastructure improvements. In addition, other challenges arise in relation to the lack of co-ordination, the poor signaling of value, and the lack of a clear translation of national objectives into roads policy.

Strategic Actions

Actions for roads must be consistent with actions elsewhere in the strategy, and so must contribute to building density in the system and assist the system in the appropriate use of modes in order to lower systems costs overall. The roads strategy must also contribute to increasing the flexibility of the system, a role for which roads are ideally suited. Roads can improve flexibility by creating a lower fixed cost infrastructure and allowing vehicles at a variety of different occupancy levels to use the network. Lastly, the roads strategy must play a role in building the platform for further upgrading, by being sustainable and offering transparent economics to enable users to make the right decisions.

As such, the strategy programme for roads covers four principal streams of action:

- Align roads strategy with customer strategies (industrial, tourism, rural development, urban)
- Focus roads investments
  - Prioritise roads within customer segments

[35] A small portion of the fuel tax is dedicated to the Road Accident Fund, which is related to safety, but has no risk-rating component. Another portion of the fuel tax finances the roads agency through an agreed allocation, but neither mechanism can be considered direct pricing of the use of roads.

  - Invest behind the prioritisation in a customer-facing fashion
  - Manage exceptions by developing ring-fenced mechanisms to fund social roads and roads to serve other non-transport national objectives
- Clear the signaling blockages in road use and pricing
  - Align pricing to create sustainability and minimise externalities
  - Provide enforcement to align risk properly
- Create institutional alignment to support the strategy and integrate across roads priorities

In doing so, the strategy will create a sustainable road network with a high degree of self-sufficiency and customer responsiveness.

Strategic Action: Align Roads Strategy with Customer Strategies

The roads network is comprised of a combination of roads owned and operated by national government, provincial government, local government, private toll road operators, concession owners, and BOT operators. Users from every different customer group travel on the roads. Rather than integrating at a national, modal level, however, the roads investment and maintenance strategy must be oriented to the strategies for each of the customer groups, shifting the locus of roads prioritisation decisions in some cases. Thus, for freight, road investments must be aligned to the corridor strategy, and prioritisation of freight roads must follow the designation of specific freight corridors emerging from the strategy. Similarly, roads decisions at all levels in the urban context must make priority investments in designated urban corridors. Roads for tourism should likewise follow the tourism strategy, and rural roads investments should follow the rural development and prioritisation framework for funding roads in sustainable communities. The result is a more complex process of determining road investments, but one which more accurately fits with the needs of the customers and helps to accomplish the strategy across modes.

Strategic Action: Focus Roads Investments

Roads are a fundamental enabler of development and a certain level of quality is needed to further growth and provide basic access and social mobility. Although all customers desire 120 km/hour dual-lane carriageways for their long-distance roads, the network can, and must stratify the quality levels of roads to focus scarce resources on the core networks.

- *Prioritise Roads Within Customer Segments.* Road network investments should focus according to customer objectives and national objectives. Thus, for example, the primary freight road investments must follow the designated freight corridors, in order to maintain a higher standard and improve operating efficiencies along these routes, and these roads will define the strategic freight network. Similarly, urban road investments should also focus on the urban corridors, with dedicated infrastructure to create busways in certain corridors. The prioritisation should also distinguish economic roads (e.g. freight,

tourism, urban corridors) from social roads (e.g. development roads. dedicated rural roads to clinics).

- *Invest behind the prioritisation in a customer-facing fashion*
  - Increase road funding to the priority road networks (within freight. tourism, urban public transport corridors, target rural communities, etc.) and differentiate spending by level of priority
  - Reduce performance requirements for branch and feeder roads, and fund accordingly
  - Increase the level of overall funding to the network to reinvest in better roads. Early reinvestment prevents higher operating costs and higher maintenance costs later
  - Do not actively invest in upgrading or expanding capacity on urban roads that serve only cars

- *Manage exceptions*
  - Identify clearly and transparently the national objective being served by constructing roads that fall outside of each customer group's prioritisation scheme
  - Ring-fence financing for meeting the objective, preferably with full funding from the customer group that benefits from the road (this may not always be possible for rural roads)
  - Create partnerships with other national departments to find funding to support roads that fulfill other national objectives.
  - Create time-limited programmes and monitor progress against goals

Several tactical choices will be required with respect to road funding and the institution(s) from which it originates. For instance, one option allows for dedicated funding through a national funding agency, another for flows through Provincial Agencies, and a third for 'tagged' funding, which is directly earmarked for use on road spending.

Strategic Action: Clear the Blockages to Signaling

Full costing of the infrastructure and externality effects is critical to restoring economic value signaling in the system. Such a step will ensure long-term sustainability, reduce the negative externality effects, and create a self-supporting system that sends the right signals of value of using the roads, and help to prevent congestion and pollution. Actions to accomplish this include:

- *Align pricing to charge road users for road use and externalities,* as discussed in the externality section above. Restoring full cost pricing will lead the system to be self-funding, self-regulating, and subject to rational decisions by road users. This will require downstream decisions about the roles of the fuel tax, and provincial licensing fees. It will also require a determination of the basis for measuring – and charging back – externality costs.
- *Improve enforcement to ensure that risk, once aligned properly, stays enforced.* The RTMC's voluntary institution approach is one possible way to

coordinate on the "matter of enforcement". Various enforcement agencies must coordinate to ensure that GVM limits begin to be enforced.

Strategic Action: Create institutional alignment to support the strategy and integrate across roads priorities

This must be linked with the funding sources to enable one or several agencies or voluntary institutions to co-ordinate all road prioritisation and integrate it with and across various corridor initiatives. The steps include:

- *Establish and agree clear goals* based on the vision and the prioritisations made within each customer-facing portion of the roads network, and integrated with other modal decisions

- *Send Clear Signals to System Users:* after creating a shared vision, disseminating it in a clear fashion becomes the critical task. To accomplish this goal requires:
  - *Coordination of decision rights,* such that all entities participating in co-operative governance of the road network are represented in customised, voluntary institutions. These institutions must involve the key players and stakeholders, encourage system thinking and innovation, and dovetail with initiatives from outside of roads (e.g. corridors).
  - *Specific funding tied to decision rights,* requiring members of these voluntary institutions to commit funding that can be used to implement the vision through enforcement, capacity building, or other means. Funding, inasmuch as possible, should be transparent and sourced from system users through user charging and ringfenced to the uses intended.

- *Create Alignment:* in addition to using funding to encourage alignment, two other actions are required.
  - *Set decision rules*, making it possible for organisations that are not directly a part of the voluntary institutions to still enact the strategy. For instance, in roads coordination, such a rule would relate to road quality prioritisation, but leave the specific decisions about which local roads fall into which category – and therefore which ones to build and maintain – to the local jurisdiction.
  - *Support with regulations,* where required, to guide the actions of firms and other actors in the sector

The result is an institution formed in a co-operative fashion that creates a higher, centralised mechanism for prioritisation while devolving specific delivery responsibility to local government. If the institutional reform is successful, it should increase the transparency of the decision process, depoliticise roads funding through separation of economic and social roads, and enhance the development of co-ordinated principles of skill sharing and overhead savings.

Creating Institutions to Support a Sustainable Roads Network

The roads system is subject to two significant institutional gaps: a lack of coordination of road prioritisation and funding, and a lack of capacity. Roads are currently prioritised and funded by individual jurisdictions (national, provincial, local), with the result that a single road may be subject to different funding priorities in each of the jurisdictions, as they apply their own specific prioritisation criteria.

There is clear need for a single institution to coordinate road investment across all jurisdictions so that national, provincial, and local authorities can uniformly prioritise and fund road construction and maintenance along key passenger and freight corridors. This will ensure customer needs are met, and that funds spent on planning, maintenance, and construction are used as effectively and efficiently as possible.

However, capacity to prioritise, plan, develop and enact road maintenance or construction is severely limited in many provinces at present, with some provinces having only one planner to manage the entire network. A capacity building institution, or "centre of excellence" would bolster existing capacity and provide the different provincial and local authorities with support in carrying out roads-related actions. Over time, a centre of excellence would develop the capacity in each of the departments as needed, supporting the constitutional intent of devolving power to lower levels of government.

16. IMPLEMENTATION OF THE STRATEGY: THE CO-ORDINATION AGENDA

This section treats the issues inherent in delivering on the strategy, setting out proposed roles for government and the private sector firms involved in transport to accomplish the strategic objectives. The proposed role of government and institutional forms are *derived* from the strategic actions, rather than established on the basis of an ideological framework. As such, they include both transitional and permanent options.

Summary: The Vision and the Strategy

The integrated vision for the strategy entails five principal components across all customer groups, based on the underlying assumption that transport is an enabling industry (and the NDOT therefore a *provider department*), assisting other segments of society in meeting objectives for basic mobility, competitive production, and social integration as effectively as possible. The core of the integrated vision therefore centres on the need to:

- Provide low systems cost transport
- Improve the level of access to the system to ensure basic mobility
- Increase service levels and reliability, and reduce transit times
- Allow the system to provide customer choice and tailored services and systems to differentiated customers
- Create a self-sustaining industry that can upgrade and meet future capacity requirements for all customer groups

To achieve the vision, the integrated strategy across all customer groups requires five key thrusts of action to be accomplished over its twenty year horizon:

1. *Orient the system around customer groups and their needs.* Create integrated systems across modes to meet the needs of specific customer groups in freight shipping and urban, rural, and tourist passengers. The primary needs are for basic access and low cost, reliable, low transit time transport services.
2. *To meet customer needs, densify transport services into designated high volume corridors for each customer-facing system* to improve economies of scale and capacity utilisation, and reduce the complexity in the networks in order to allow more reliable and time-efficient service. Core investments – large and small – should follow into the key corridors to improve capacity, service, and operating efficiency.
3. *Create financially self-sustaining infrastructure and operations* by clarifying the signaling mechanisms between customers, providers, and the nation (e.g. for pricing and capacity expansion); and by creating a platform from which each provider generates sufficient revenue from customers to support and upgrade its own operational and infrastructural needs but not those of other, unrelated businesses.

4. *Improve firm level productivity* by enhancing self-sustainability, reintroducing rational economics, and clarifying the 'rules of the game.'
5. *Develop explicit and transparent mechanisms to manage exceptions from the other imperatives.* There will be appropriate, even compelling, economic or national objectives that require the system to deviate from the strategic imperatives of low systems cost or self-sustaining transport entities, to allow important national objectives to be met. In these cases, the government should clearly articulate the objectives to serve, identify the trade-offs against transport cost and service, and create funded mandates tied to the meeting of those objectives over a specific and measurable period of time. These developments must, therefore, be self-sufficient.

There are many obstacles to accomplishing this strategy, however, and the final portion of the strategy must address these blockages and potential barriers to successful implementation. The current system, at the level of the transport providers and the various levels of government, is simply not aligned to deliver on these objectives.

Lack of Alignment and Its Origins

Different portions of the situational analysis revealed that the system lacks proper alignment. At a summary level, the analysis uncovered a lack of transport alignment in at least six areas:

- With industrial supply chains and industrial strategy
- With national and regional tourism strategy
- With a co-ordinated rural infrastructure strategy
- With SADC regional integration
- With urban residential and industrial spatial planning
- With training institutions providing for sector capacity needs

This general lack of alignment poses the biggest potential barrier to implementation of the strategy, and is responsible for many of the current deficits in system performance already identified. The principal source of mis-alignment is, of course, is the shift to a set of new national objectives resulting from the advent of non-racial democracy in 1994. More specifically, the lack of alignment also emerges from a situation in which there had been no integrating strategic vision or strategic framework prior to the 1997 Transport White Paper or Moving South Africa. In particular, the role of transport historically has not been agreed and clearly defined, and has been subject to external, non-transport mandates which are unsustainable to support.

There has historically been no institution or grouping of institutions with the function of integrating across the individual components of the system. Each operator, each Department, each level of government, and each component of the system (e.g. freight) has been managing to its own narrow objectives. This has been appropriate and rational behaviour, given the absence of a larger system-level perspective that looks across not

just the transport system but other related disciplines, like land use, to create an integrated, national perspective.

Components of the system have therefore maximised against an unintegrated set of constraints and towards an unintegrated set of objectives. Not surprisingly, then, this has led to a severe distortion of the signals of value, with the result that individual players can – at worst – destroy value in the system whilst maximising the value to themselves. This results in the penalisation of customers through distorted pricing, or in insufficient reinvestment to meet their needs. It also penalises other transport providers by creating behaviours or investments which are unsustainable. One example of maximising against individual objectives at the cost of the system, parallel to the classic 'tragedy of the commons'[36] paradox, is road freight overloading. In this situation, hauliers overload to improve their individual cost position, thereby raising the cost of road maintenance for the entire system.

The final distortion of the current system has been a confusion of roles and decision rights, such that firms have been making decisions that rightly sit at the system level, and system-level actors (mainly government) have not taken integrated decisions to provide sufficient guidance to the firms.

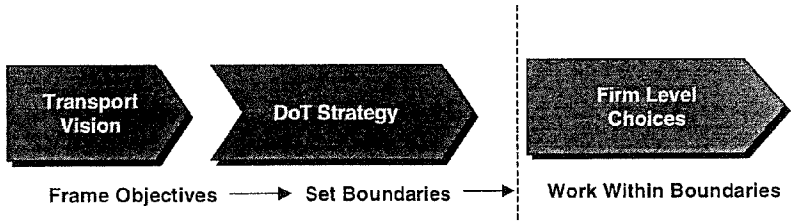
Moving South Africa recognises these problems, and has developed a framework and a set of action plans to create the necessary alignment, both across and within government and between government and the private sector to prevent such distortions from occurring. This approach, called *structured co-operation*, is a precondition to the successful realisation of the strategy.

Creating System Logic and Alignment Across the System

Sections 9 through 16 of this report have described a vision for transport and the strategic actions required to accomplish the vision by 2020. The strategy generally focuses at the system level and does not prescribe the tactical choices, made at the firm level, of how the individual actors follow through on the vision. These elements are represented in the top row of the diagram in **Figure 107**, which pictures the overall approach to creating alignment, where the strategy and the vision frame the objectives and set boundaries for operators, who then work within those boundaries to make individual choices at the firm level which do not distort the system as a whole.

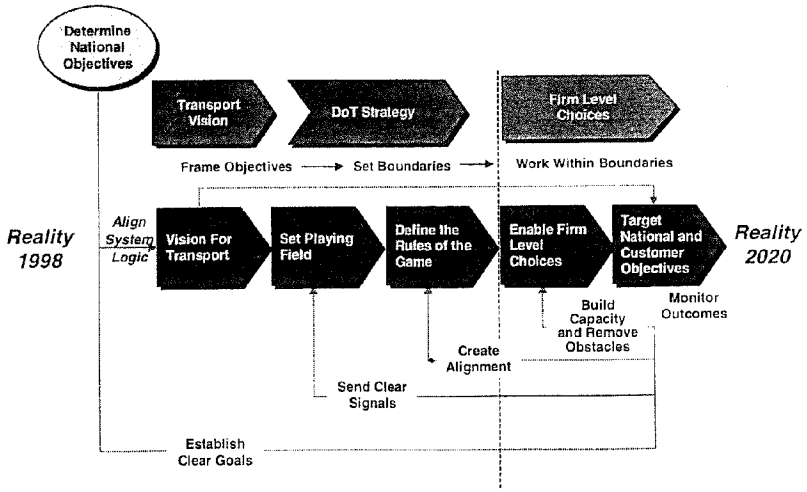
[36] The 'Tragedy of the Commons' refers to a situation where all farmers graze sheep or cattle on common grazing land. Each has an individual incentive to graze as much as possible, since the commons are free. However, if all farmers pursue this line of action, then the commons soon become overgrazed and therefore useful to none of them.

Figure 107: Strategic Choices vs. Firm-Level Choices



The strategy must then be overlaid on the delivery system to implement it. The second row in **Figure 108** outlines the necessary steps to accomplish the implementation of the strategy. The five steps portrayed in the second row constitute the system level strategic actions that create the context within which transport firms will act. The first three steps, creating the vision for transport, setting the playing field, and defining the rules of the game relate to the strategic role of government. The last two, enabling firm level choices and targeting outcomes (in line with national and customer objectives) fall into the province of firm-level choices, or actions that enhance the clarity of such choices. Taken together, the five steps work to align the overall system logic for delivery of the strategy and create the platform for co-operative governance within and across all levels of government.

Figure 108: Five Steps to Realise the Vision



However, multiple obstacles currently block the ability to promote aligned system-wide action through these five steps. Each step requires different measures to address the blockages in the way, but generally, actions that will remove obstacles include:

- *Establishing clear goals* in line with the national objectives that provide all players in the system with a view of the priorities to be acted upon in order to produce the targeted outcomes.
- *Sending clear signals* about the goals established and clarifying decision rights and decision rules for implementation. In this way, actors in the system will know that a predictable playing field exists for the parties charged with implementation.
- *Creating alignment* amongst the players to ensure maximum delivery against a commonly understood set of 'rules of the game' for competition or participation in the transport industry.
- *Building capacity* to implement the strategy and deliver the basic services, particularly at the level of the individual firms or levels of government. Once the 'rules of the game' have been set, then individual firms must take the tactical actions within that framework. They will be unable to do it without sufficient human capacity.
- *Monitor outcomes*, measured against the targets set by the integrated national objectives to ensure that the system – and the firms within it – are delivering. Outcomes that are not being met will require new efforts further upstream to readjust the system in order to meet the targets.

Each of these actions will remove obstacles at different stages of the process and for different participants.

The Strategic Role of Government: The Steps for Alignment and Removing Obstacles to Success

One preliminary but essential step is required prior to realigning the system. The most important measure, without which the strategy cannot proceed, is that of determining the national objectives. MSA has identified a number of national objectives that are currently ascendant at the moment; however, over the twenty year life of the strategy, these objectives will undoubtedly shift, and the system must be able to align and re-align itself to these objectives as they evolve.

Pre-Step: Determine National Objectives

Since the national objectives anchor the economic logic of the system and tell the transport system – a provider industry – whom and what goals to serve, it is critical to gain a high level of explicit agreement on them. Without them, the transport system cannot be aligned. This step entails three specific components:

- *Make trade-offs across competing objectives.* Wharfage charges at the ports, for example, currently represent a clear trade-off against growth in value-added export competitiveness in favour of funding the Transnet pension deficit. This reflects an inherited trade-off made under the previous government, and the ramifications of making a new trade-off would, of

necessity, have to be phased in over time – rather than immediately -- to allow firms like Portnet to adjust to the new national priorities.

- *Make the difficult choices based on those trade-offs.* Having determined the national objective, choose the geographic and customer focus of investment, for instance, in West Coast port capacity.
- *Clearly signal down to the individual departments and layers of government what trade-offs have been made.* One example of this is the requirement for explicit coordination amongst DTI, NDOT, other parts of government, and operators to align actions and investments in accordance with the trade-offs.

Having determined the national objectives in a fashion that is fair and clearly transmitted to the constituent parts of government, the strategy must move into the five step portion of the implementation plan.

Step One: Establish the Vision for Transport

The most fundamental requirement at this stage is to communicate a clear, concise, and agreed-upon strategic vision to the rest of government and the transport sector. But securing agreement amongst relevant parties, and then creating the framework for its implementation is a process which is subject to many obstacles. The situational analysis revealed these to be:

- A lack of system-level decision-making, so individual government departments maximise according to a narrow set of constraints that do not take into account system effects. Housing in urban areas offers a prime example of this pattern.
- Weak institutions that lack the authority or means to implement, for example some provincial roads departments.
- Mis-aligned decision rights, such that decisions that affect the same goal are taken separately without regard for one another. This occurs quite visibly in the context of road safety enforcement or some bilateral agreement negotiation in aviation.
- Poor communication and signaling, such that entities elsewhere in the transport platform do not have sufficient guidance to stay aligned to the vision. An example of this is the unclear direction to Spoornet regarding its sub-optimal branch line network.
- Defaulting to false agreement, that is easily broken, since there is no effective co-operative governance framework.

Thus, to address these obstacles, this strategic action requires the fulfillment of three principal steps, all in the service of **establishing clear goals** understood by all:

- *Establish a clear strategy* by developing the White Paper into a specific strategy that makes choices and establishes constraints. An example of this is the direction to establish high volume densified corridors for freight traffic.

- *Develop a workable framework for co-operative governance amongst decision-makers* by getting the key government players around the table, consulting appropriately with other stakeholders, and agreeing the strategy. Equally important is to establish some authority to take the decisions and make them work. Thus, decision rights must be pooled and, critically, funding – inasmuch as it is available and is essential to the strategy that is agreed – must be linked to the decision rights in order to align actions. This is needed in a number of parts of the strategy, especially where a corridor decision requires co-ordination of investment across modes and layers of government. An example of this would be the proposed RTMC structure for road safety, which is establishing clear goals and pooling decision rights and funding.

  The Constitution provides a framework for co-operative governance, as follows. It sets forth the principle that:

  "All spheres of government must co-operate with one another in mutual trust and good faith by:
  - *Fostering friendly relations*
  - *Assisting and supporting one another*
  - *Informing one another of, and consulting one another on, matters of common interest*
  - *Coordinating their actions and legislation with one another*
  - *Adhering to agreed principles*
  - *Provide effective, transparent, accountable and coherent government for the Republic as a whole*
  - *Exercise their powers and perform their functions in a manner that does not encroach on the geographical, functional, or institutional integrity of the government in another sphere"*

- *Determine which signals to send.* Ensure that other parts of government and the transport platform are clear on the strategy and understand the terms on which they can engage transport.

While MSA has endeavoured to establish the strategy in a clear fashion, working with participants at all levels of government and with private sector operators, the other two parts of this step remain to be done in order to address the obstacles.

Step Two: Set the Playing Field

Once the strategy is agreed and clear goals are set, the second step requires assembling customised institutional structures which ensure that all the relevant players are participating in implementation in a way that reflects the strategic orientation and choices. Several obstacles exist to accomplishing this step, and the most prominent of them are:

- Institutional gaps, where there are no institutions that exist to take co-ordinating responsibility. An example of this is the roads system across levels of government.
- Parochial interests, which are a natural phenomenon in government all over the world, which tend to put more narrow set of criteria ahead of the efficacy of the system. Most times this results not from malevolence but rather from genuine good intent, where different jurisdictions have different priorities.
- Uncoordinated decision-making by different entities, such that DTI can emphasise a shift to a value-added manufacturing export economy but Portnet keeps port wharfage charges based on *ad valorem* fees.
- Clouded signals to the various players in the transport system, evidenced by a situation wherein weak enforcement of taxi registration and permitting has historically contradicted a strong effort at the level of the NTTT to formalise the industry.
- Following the old rule book. Many firms and governmental entities within the transport platform continue to follow the old 'rule book' in the absence of clear signals pertaining to the new one. Thus, some municipalities continue to fund municipal bus systems that reach primarily white commuters, rather than integrating them into the overall urban transport network with taxis, commuter rail, or other buses.[37]
- The presence of a substantial amount of externalities, which have historically not been factored in to the overall transport decision-making framework.

To remove these obstacles, the transport system must "set the playing field" with an appropriate group of institutions and tools. The most important requirement of the actions to remedy the blockages is to **send clear signals**. This can be accomplished principally through co-ordinating decision rights amongst the disparate actors in the system. Two particular levers are available -- and essential – for coordinating decision rights:

- *Establish customised institutions* to fill institutional gaps and overcome parochial interests. These institutions will have the primary responsibility for enacting the principles of co-operative governance from step one. These institutions must involve the key players (customers, other institutions with decision rights, etc.) and must ensure a customer orientation. Such institutions must not be organised, in other words, around strict modal interests, but rather around customer groupings (e.g. urban passengers).

  The mandate for these institutions must derive from the strategy, and it must encourage system integration and innovation. It must have the ability and authority to control actions taken by players that would create a negative impact on the system, for instance, land use planning that counters the need for densification. Such exceptions may be worthwhile in terms of national objectives, but the institution must have the capability to isolate them to allow

[37] This is beginning to change with the Land Transport Bill tabled in Parliament, pushing local Transport Authorities to integrate more fully.

them to stand on their own economic logic and not detract from that of the overall system. And such customised institutions must also develop critical human capacity to support the system and create a talent pool for the transport sector generally.

The nature of some of these customised institutions will be transitional, while others will be more permanent features of the institutional landscape. The transitional ones will arise to serve not only a co-ordinating function, but a capacity building function as well (as described below under step four). As capacity develops, some participants will no longer be a part of the joint institution and will rather provide the capabilities themselves, in line with the overall strategic direction. While their decision rights will still be pooled, their capability to act will be independently administered. This is more likely to happen, for instance, with some of the more advanced provinces in later stages, as they develop the capacity to implement on their own. In such a case, the remaining provinces would still be joined with NDOT and other relevant participants in delivering the services (e.g. enforcement), but would also aim to create a self-sustaining capacity to implement over the twenty year horizon of the strategy.

- *Underpin institutional decision making with funded mandates.* In order for the decision rights to be meaningful, such customised institutions require a funding basis, in order to ensure that funding of projects, infrastructure, subsidies, and other elements of the system are linked to the larger strategy. In addition, funding creates a critical mechanism by which such institutions can help to reorient the objectives of providers in a corridor, for instance, more towards customer satisfaction.

  Part of the difficulty with the current funding system is the complexity of the existing structures, with little co-ordination amongst funding entities or between funding and national objectives. Rarely do such funding structures complement each other in the service of a common objective. By tying the funding to decision-making, the system simplifies around implementing the agreed-upon national objectives.

The most salient example of a system that currently is not aligned to send clear signals is that for the provision of road infrastructure. By creating voluntary institutions that close gaps in the institutional landscape and pool decision rights and funding, the strategy bridges two problems: co-ordination and clear signaling, and a lack of capacity in some of the governmental institutions.

Step Three: Define the 'Rules of the Game'

Having set the playing field, the next required step is to clarify the rules of governance. More specifically, having invested decision rights in a cooperatively governed structure, it becomes essential to provide decision rules for the local governing bodies and the

actors within the transport platform. In the absence of such decision rules, they will not act in concert with the overall strategy. The strategy is predicated on setting the 'rules of the game', and then leaving it to the many players in the platform or in local or provincial government to make the tactical choices within the boundaries of these decision rules. Thus, this is the last step in the five step chain that embodies the strategic role of government, and it is this step that puts the final guideposts in place in order to create alignment to the strategy.

Four principal obstacles have operated in the past to block a clear definition of the 'rules of the game'. These obstacles consist of:

- Lack of rules. At the present time, there are very few decision rules filtering to other governmental entities about how to proceed or how not to. Is it important, for instance, for Spoornet to retain its earnings from CoalLink and reinvest for those customers, or is it permissible to reinvest those proceeds in assisting the competitiveness of rail general cargo?
- Minimal enforcement, which dilutes any decision rules that currently exist by sending mixed signals to the operators within the transport platform, especially on the roads.
- Confusing signals, which blur decision rules and do not prioritise. So, for instance, the national government signals to Transnet that high value-added manufactured exports are important, but simultaneously signals that Transnet is responsible for its pension fund deficit, which is then funded from wharfage charges and other charges affecting exporters.
- The wrong rules, in some cases, characterise the system. For example, although the Land Transport Bill will address some of these rules, there is no clear mandate in many areas. Subsidies for commuters do provide some decision rules, but the structure of those subsidies – targeted at commuters rather than the stranded – still reflects the old set of decision rules.

Two kinds of actions can address these obstacles and **create the required alignment** for firms to make the tactical choices required to implement the strategy in a coherent fashion. These actions are:

- *Set decision rules* in a clear and consistent fashion. The basic decision rules entail:
  - *Investing behind customer segments*, to ensure the provision of self-sufficient and sustainable services that can be self-upgrading for customers. An example of this would be to create dedicated busways along corridors to improve public transport for three key segments.
  - *Internalising externalities*, in a manner that enhances the sustainability of the system in relation its to larger societal impact, and ensures that users bear the full costs of their actions.
  - *Isolate the 'exceptions'*. In some cases, national objectives will rightly dictate deviating from the investments behind customer segments or not investing to create lowest systems cost. In such instances, the new

development initiatives – which will usually start at suboptimal scale -- should not be permitted to undermine the rest of the strategy. The trade-offs against customer interests should be made explicit, and these 'exceptions' should be economically self-sustaining, with funding from whichever 'customer department' wishes the objective to be enacted.

- *Develop sustainable operators* by ensuring, for instance, through the tendering process, that they are reinvesting to adequate levels and bearing the full cost of operations. Also, allow operators to price differentiate among segments to charge users appropriately, especially for differentiated services.
- *Make the system economics transparent* by removing distortions in costing, pricing, and capacity planning. One illustration of this is the need to remove barriers – one example is bilateral agreements, another is the shareholder's access to capital – to capacity expansion in aviation. Another example is in road use charging for cars, which is currently not recovering its full cost. A third example is cost-based port pricing rather than *ad valorem* pricing. Only by removing these distortions can economic logic and sustainability move back into the system.

- *Support with regulations.* Government must take a monitoring role, to follow the performance of the transport sector against the specific customer targets and performance objectives for the system. When firms take action to undermine the system sustainability or the other decision rules, the government must have a regulatory power available, for instance on monopoly profits. Other economic regulations will be required if, for instance, free taxi entry begins to undermine the optimal corridor economics, thereby requiring some measure of regulation on entry into the taxi industry. In other cases, regulatory power may consist more of regulating safety and environmental impact. In general, however, government should only regulate when firms appear to be undermining the strategy, failing to serve customer needs, or damaging the economic logic of the system.

Taken together, the first three steps require an active role for government in articulating the system-level choices that frame the environment in which the firms must work. These system choices primarily relate to issues of building system density to restore the economic logic in the system, and building system scale, to create a basis for entity-level sustainability. The two decisions combined should deliver a system that is lower systems cost at high levels of reliability and service. Equally important, the first three steps clarify an integrated system-level framework that elucidate and specify decision rules; co-ordinate, allocate and align decision rights; and create a context for cooperative governance.

From Strategic to Facilitative Role of Government

Thus, the first three steps taken together accomplish the strategic function of government by establishing the vision, playing field, and decision rules. These steps establish the

system-level choices and thereby clear the way for firms to operate free of the old rules and to make long-term strategic decisions of their own about which customers to serve, at what cost, and what level of service, and where to invest to make such service possible.

The arena for action now shifts primarily to that of the firms. Thus, beyond these first three steps, the role of government should become one that is much more facilitative and upgrades the quality of the transport platform. This role recognises that firms now play the primary role in delivery against a set of well-monitored target outcomes. The final two steps assist in this process, which is where the majority of implementation activity will occur.

Step Four: Enable Firm Level Choices

The principal obstacle that prevents rational firm-level choice is the absence of a strategy that filters down to firms in the form of clear vision, decision rules backed by explicit decision rights, or focus on customer-facing systems. As a result, the firms are still being guided, in some cases, by outdated decisions based on the old 'rules of the game.' Evidence for this can be seen, for instance, in some public transport operators acting to maximise costs and not be concerned about dropping ridership because of a cost-plus subsidy formula in some cases.

The strategic action – and one which is much more facilitative than the first three steps – to enable firm level choices is that of **building capacity**. Since delivery will happen primarily at a level outside that of national government, there are three national government levers for building capacity in the system that will help firms and other levels of government to make informed choices in line with the strategy. Those levers encompass:

- *Launch demonstration projects* to reinforce decisions about density and role of modes. The national government can lead by selecting projects that have a clear strategic agenda with strongly favourable conditions for action. NDOT can then support such first movers with specific expertise from inside and outside the Department, and link the demonstration project with "Centres of Excellence" that would assist with building capacity and creating networks of professionals – both public and private – who can later go out to the rest of the system and provide expertise and cross-pollination of ideas. Most importantly, these projects must demonstrate the strategic logic and performance improvements in a real situation, to both providers and customers.

  Thus, they must have measurable baselines and targets against which to be evaluated. An example of this might be in selecting an urban corridor for realignment of services and infrastructure according to the customer profile and volumes (e.g. reorient subsidies to serve sensitive and selective customers). Another example would be the launch of a demonstration project to determine the role of smaller feeder ports in relation to the east-west

international container ports. All of these demonstration projects will serve to breed innovation by tackling leading-edge strategic issues and capturing the lessons from each.

- *Build human capacity to upgrade the platform* by first communicating the strategy to all affected entities, so that all players start from the same strategic vision. Second, to overcome critical human capacity gaps in both private and public sectors, NDOT should create vehicles through which other actors can pool resources into Centres of Excellence which will serve as the epicenter of training and distribution of specific expertise, creating a core team of experts to leverage elsewhere in the system. These centres can be established within the context of, or fully outside of, some of the voluntary institutions described above.

  Third, by pooling resources, the strategy can also explicitly target provincial and local transport professionals, pulling them into the Centres of Excellence to gain valuable expertise and exposure before going back to their home provinces to implement the strategy there. The final component of this lever is to build linkages across governmental entities and private sector operators, by creating personnel exchanges, fora, and other opportunities to exchange information and breed innovation. These linkages will become increasingly critical as the task of the platform turns from implementing the strategy to upgrading, responding to new market conditions, and innovating in servicing customers.

Developing the Capacity for Strategic Planning in Transport in Argentina

In the early 1980s, the Secretariat of Transport (SoT) in Argentina embarked on the development of a new transport strategy. It soon became clear, however, that there was a severe lack of capacity both within the Secretariat itself, and the transport sector more generally, to think in the multi-disciplinary, cross-modal manner necessary to formulate an integrated strategy.

As part of focused capacity building programme, the SoT recruited twenty-five recent graduates with Masters degrees in economics or engineering, but without specific transport backgrounds. They were given full scholarships to the SoT training program and were paid a stipend. The trainees were chosen for their motivation, their aptitude, their team working skills, and their ability to integrate ideas, skills lacking within the Secretariat, but which had been identified as critical to strategy development.

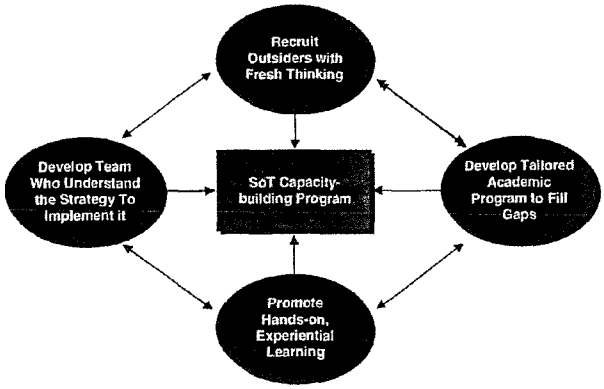
In order to provide the recruits with training in hard transport skills, the SoT first looked to domestic programmes, but found that existing programmes in Argentina were unsuitable, and that academic institutions were uninterested in developing new curricula to meet their specific requiremets. Furthermore, although international programmes were available, the cost of sending people abroad was prohibitive. Without any other viable options, the SoT took it upon itself to establish an internal training programme

specifically designed to teach those skills necessary for the development and implementation of the new transport strategy.

The program's curriculum was designed by international experts, led by the Canadian deputy transport commissioner, as Canada's experience in developing transport strategy was seen as particularly applicable to Argentina. Faculty came from a variety of international organisations and NGOs, in particular the EDI arm of the World Bank . The participants spent half their time learning theory, and the other half applying the theory in practice. Participants worked alongside consultants, performing specific analyses, and becoming familiar with both the analytic methodologies, and with the emerging findings.

The program lasted 15 months at the end of which 21 people graduated with an accredited M.Sc. The graduates joined the SoT as policy and strategy analysts responsible for implementing the strategy that they had helped develop. However, following significant changes in national leadership a year after the completion of the strategy, many people left the SoT for transport-related careers in the private sector.

SoT Actions To Develop Human Capacity



Capacity Building in New Zealand: Improving the Quality of Transport Data

The New Zealand government started a process of radical restructuring with the passage of the State Sector Act in 1988. The Act redefined roles and relationships in government,

ensuring that Ministers focused on policy objectives while Ministries focused on the means to achieve those objectives. It soon became evident, however, that there was a lack of robust transport data to support informed transport policy and strategy. To rectify the situation, they embarked on a three step process to collate existing data to support the policy-making process, and to identify data gaps and new sources of data:

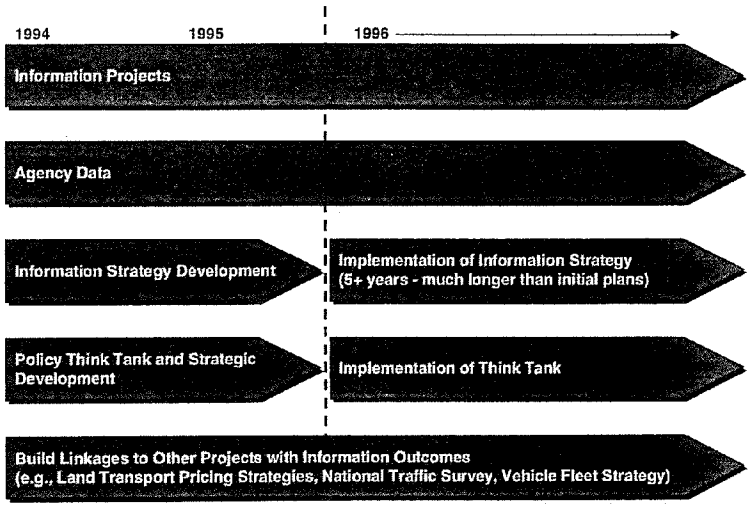
1. The Ministry first determined what information they needed, and whether it was available. If it was available in the transport sector, but not within government, the Ministry set out to create the necessary linkages to allow them to access the data.

2. In order to collect data that was currently unavailable, the Ministry made system changes (e.g. rewriting agency contracts to require them to collect certain pieces of data; or working with other Ministries to collect data through other government projects) to ensure improved data flows. The Ministry targeted specific data-gaps covering industry profitability and sustainability, as well as the relative competitiveness of the system as a whole.

3. Following this, the Ministry established a think tank to develop policy or strategy recommendations to make the transport system more competitive. In addition, an information strategy was developed to capture industry-wide data by focusing on individual firms and aggregating the information to create a portrait of the entire system.

Improving the quality of data proved to be a time consuming, long term exercise, given the time needed to understand exactly what data needs to be collected, and to develop the necessary relationships between the data providers (usually industry) and the MoT. Original estimates of a one to two year planning process were too short, and implementation still continues today.

Long-term Approach to Improve the Quality of Transport Data in New Zealand



- *Build the knowledge capacity to upgrade the platform.* In order to succeed, the strategy will need to set measurable targets for performance and NDOT and others will need data to evaluate their success. This will require a much improved knowledge network encompassing data collection and analysis capabilities in the public and private domains. The MSA strategy is driven off the principle of data informing choice, and strategic actions and tactical choices beyond the strategy require no less data. Examples of relevant data to collect include customer satisfaction measures and monopoly profit guidelines and measures.

One element that is deliberately absent in this step of enabling firm-level choices is that of national government making firm-level decisions. The day-to-day decisions and implementation responsibility lies clearly in the domain of the firms, and in this arena most of the decision rights – in accordance with the strategic vision – accrue to them.

Thus, the firms, too, have a responsibility to begin investing in better capacity, so they can understand the density and role of mode decisions upon which the strategy depends and the implications for their businesses. They must also generate the capacity to align their strategies to the new reality and subsequently understand and invest to serve customer segments. They will need to further develop the capacity to innovate, rather than just survive, within the new strategic context. And, quite importantly, they will need to build their own linkages to providers in other parts of the transport system in order to

improve system integration and coordinated action on behalf of a customer segment that wants integrated end-to-end service. However, beyond facilitating the growth of capacity, the development of institutions to meet the capacity needs of industry, and the linkages across the system, the government does not participate in these firm-level decisions about how to develop and deploy human capacity.

Rather, firms are left with wide latitude for operation within the bounds of the strategic framework. The firms themselves will need to make the required improvements to increase productivity, but in the context of a new dynamic that improves the economic logic of the system in a way that enables, for instance, higher capacity utilisation. The firms themselves will need to develop new strategies within an environment of transparent economics and self-sufficient operations. And the firms themselves will need to make the specific capacity determinations in the service of competing for customers. Those firms that do not develop these capabilities will not survive until 2020. Those who do, conversely, will prosper and ultimately replace those who do not.

Step Five: Target National and Customer Objectives

The performance requirements articulated as a component of the strategy set the stage for a comprehensive set of target outcomes. The key set of levers to realising these target national and customer objectives, however, becomes the ability to measure and monitor them. Four levers constitute the specific programme for this critical function that ensures the ability to mark progress and adjust course, if necessary:

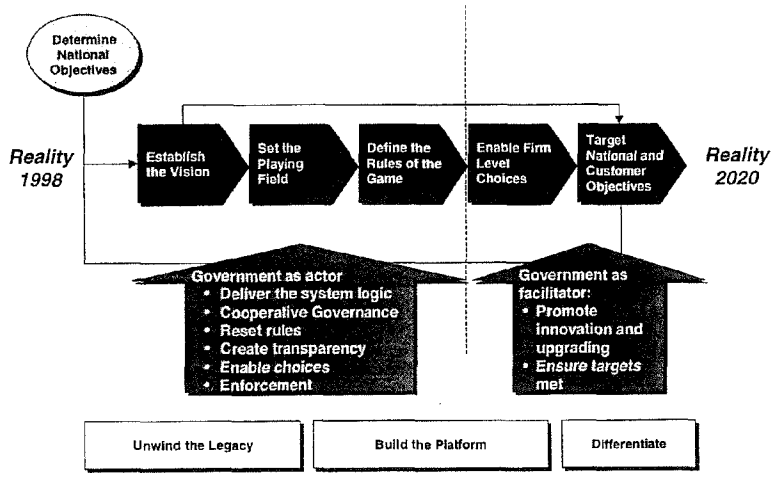
- *Establish the targets* and performance requirements, based on customer and national objectives, for the platform.
- *Measure performance against targets* to ensure that operators are investing for sustainability, that exceptions are isolated and self-sufficient from sources outside the basic transport network, and that investment into corridors is aligned with customer needs and the economics of the system and the optimal modes. Also, check that firms are operating within the system decision rules.
- *Link funding to performance against targets* such that projects do not receive renewals in the same form if they are not meeting their goals. NDOT possesses several strong mechanisms to accomplish this step through the linking of contracts to performance outcome measures, both through tendering processes, subsidy targeting, and demonstration project support.
- *Check to ensure the system choices are producing the desired results.* And, if not, reframe the choices and decision rules until they are. Accomplishing the strategic vision will require a certain amount of experimentation, and – especially in the early stages – those charged with implementation must not be deterred from the act of continuous redesign if initial efforts do not achieve the desired results and measurable data provides insight into why that is so.

The five step framework thus provides a basis for clarifying decision rules and decision rights, pushing decisions to the appropriate levels and granting authority for integration to specific, purpose-designed bodies of voluntary origin. These decision rules push much of

the operating authority to either the lowest level of government or the firms within the platform, but do so in a way that ensures a high degree of consonance with the strategic vision and the decision rights set out at a national government level.

Figure 109 summarises the different roles of government in the transport sector, separating the role of government as actor with a strong "unwind" and clarification agenda, from the role of government that increasingly facilitates the players within the platform to build the platform itself and eventually differentiate the level and types of service available to the customers.

Figure 109: The Role of Government in the Strategy



The Need for a Single Point of Strategic Integration

At the system level, MSA found that no entity was currently mandated to make choices about the scope of the system or the size of its components. Decision rules are unclear, decision rights are highly fragmented, and even under the new Constitution thus far, co-operative governance has yet to deliver results. There must be an institution, or forum which will ensure that the actions taken in each part of the transport system have positive impact on the system in general and on the target national and customer objectives in particular. Such an institution should:

- Function to a mandate deriving from the White Paper and the agreed strategic thrusts that emerge from it
- Negotiate other mandates deriving from the national objectives which the transport system is expected to pursue
- Devolve responsibility for system integration and system optimisation to an accountable, definable leadership group, led by the Minister of Transport

- Integrate the players responsible for managing the strategic agenda with those who act on the ground
- Have the capacity to negotiate agreements between providers of transport infrastructure and operations to ensure that individual decisions which have system effects are taken not only in the interests of the individual player, but of other players in the system as a whole

Only an institution with such wide-ranging authority and perspective can provide the strategic integration needed to implement the vision and accomplish the five step programme.

17. INTEGRATED GENERAL PRINCIPLES OF THE STRATEGY

From the strategies for freight, passengers, roads, externalities, and implementation, it is possible to draw out a derived set of fourteen general principles for the strategy to guide decision-makers charged with implementation. These principles emerge from a situation-specific context and the strategy to address the particular environment that characterises South African transport. Such general principles are consistent with those articulated in the White Paper, and echo themes that arise within each of the sub-sector strategies. As a whole, they provide a recommended set of guidelines to strategic action.

- *Create customer facing systems.*
  Orient the strategic actions and prioritisation decisions around distinct customer, rather than modal, groupings.

- *Enhance customer power.*
  Take actions that improve the ability of customers to demand – and receive – high levels of service for a given cost of the system. In addition, take measures to improve customers' ability to capture the benefits that flow from the strategy. This applies to customers ranging from the stranded in urban areas to the most sophisticated freight exporters. Create 'rules of the game' which allow customers to receive differentiated service.

- *Allocate resources strategically.*
  Base resource allocation decisions, whether for infrastructure or operations, on the strategic vision and the customer focus. Use resources to enhance decision rights and align the implementation to the strategy.

- *Remove obstacles.*
  Act to create self-sustaining systems that can stand on their own economic logic, and remove obstacles, e.g. unclear signaling or unsustainable funding mandates that prevent operator self-sufficiency.

- *Create standalone self-funding business entities*
  Create a playing field in which businesses are self-sufficient financially -- without inward subsidy from, or outward subsidy to, unrelated other businesses – and where they can serve and reinvest for their target customer segments in a sustainable fashion.

- *Regulate supplier power.*
  Where suppliers enjoy a monopoly or an imbalance versus their customers. the government must act to impose economic regulation or introduce competition to ensure that customers can achieve their objectives.

- *Align signaling.*
  Create institutions with pooled decision rights and clear decision rules in order to align the signaling of national objectives and transport objectives into the platform. In addition, align signaling of value through transparent full costing and pricing mechanisms.

- *Integrate value chains.*
  Create integrated corridors and other entities that focus on meeting needs of customers not through specific modal applications but rather through integrated multi-modal or intermodal solutions.

- *Devolve power to act.*
  Over the twenty year horizon of the project, create capabilities at lower levels of government to enact the strategy and empower them to do so by clarifying signals and aligning decision rights and rules. Also, move the locus of implementation into the platform and down to the firm level once the system is acting in an aligned, obstacle-free fashion.

- *Reinforce modal economics.*
  Design transparent pricing and costing and services in corridors that leverage the natural economics of density and distance for each mode. Optimising modes allows lower systems costs, simpler networks, improved service and reliability, and higher firm-level productivity.

- *Enforce the rules.*
  Reinforce the alignment of institutions and risk by vigorously enforcing rules of the game, and create mechanisms to internalise the costs of enforcement as much as possible to the users.

- *Enable firm-level choices.*
  Set the platform through clear rules, direct signaling, and identifiable decision rights in a manner that enables firms to make the choices needed to reinvest, upgrade, and innovate in the service of customers. Enable firms to perform based on their choices, unencumbered by funded or unfunded national mandates.

- *Encourage competition*
  Create competition wherever possible, but do so in the context of other imperatives to create sufficient scope and scale in the sector. Do not allow competition, for example, to undermine optimal modal economics in a corridor. In the absence of rivalry, simulate its effects through regulation.

- *Recover full costs from users*
  Charge users for the full value of the infrastructure and operations used, as well as the externality effects for which they bear responsibility. Do not, conversely, charge users above the full cost in order to support infrastructure and operations that do not provide them with benefits.

18. BENEFITS AND BENEFICIARIES

Perhaps the most complex issue related to the implementation of the strategy is the determination of beneficiaries – which customer segments and providers benefit from the refocusing of the transport platform in conformance to the vision. The flip side of this question is the more vexing one of who loses? These questions must also be viewed through the lens of overall impact on the nation.

Given the constraints on funding and sustainability throughout the transport system, ensuring that benefits are harvested and systematically redeployed is critical. Benefits that accrue at a system level must flow, as much as possible to the customers of the system, resulting in lower costs to passengers, and greater competitiveness to manufacturers. Within some providers, there will, understandably in consequence of their sustainability problems, be considerable incentive to hold on to the benefits wherever possible, and this must be guarded against as it will defeat the purpose of the strategy. Any measurement of gains and losses must be anchored in the impact of the strategy on the customers and the nation, and measured and monitored accordingly.

Short term pain, long term gain

In the nature of restructuring in general, a number of the strategic actions will require up-front investment or cost in order to effect the changes necessary. Systems benefits will be long term in character, and may take a long time developing, while costs will be high at first. MSA is convinced that the restructuring will have both high economic and social returns, but clearly the investments required to kick start the process will have to be found, or at the very least, staged in a fashion that allows for them to be substantially funded.

At the very highest level, the distribution of benefits can be broken into four parts:

1. The creation of greater value for customers;
2. The improvement in industry profitability and reinvestment;
3. The lowering of the fiscal burden;
4. The minimisation of externalities.

Freight benefits

As **Figure 110** shows, there are decreased requirements for funding from branch rail, non-core ports and branch roads as well as road funding to repair overloading that can be avoided. Requirements for road corridors, SADC links, core ports and inland terminals and logistics will increase. The potential savings in rail from improved operations, and income from enforcement and road user charges will be great, while port wharfage charges will, in the medium term, likely fall.

The complexity in freight is that much of the saving will occur inside of the operating entities of Transnet, and so will, of themselves, deliver little direct benefit into the system. Clearly, the need to fund at a Transnet level will be substantially reduced, or

eradicated in the medium term. Much of the saving will however have to go to funding the transformation of the Transnet entities themselves in the short term. This will require a team of government and Transnet officers who negotiate and manage the and timing of benefits flows. Their charge should be to find the quickest path to savings and service improvements to customers. A clear provision must be made for the retraining and nurturing of those who are victims in the consolidation as a primary use of funds in the early period.

Figure 110: Summary Potential Benefits

	Maritime	Inland
Build Density Around Corridors	• Trade flow balancing raises prices by 18 to 25% from 2004 • Reduction in multiple port calls: 2 to 11% savings in cost and transit time	• Separation of core rail lines from branch lines reduces core line costs by 15% • Investment in corridor freight network reduces vehicle operating costs
Appropriate Use of Modes and Modal Economies of Scale	• Increase vessel size decreases vessel cost by 17% • Feeder and specialised ports save from 3 to 5 days in transit time	• Increased use of unit trains improves service reliability • Road user charges for infrastructure and externalities increase 0.5 to 1 cent per NTK
Improve Firm-Level Performance	• Port investment, fixed vessel arrivals and operating efficiencies eliminate excess port delays	• Rail operational improvements reduce general freight costs by 25% • Road freight productivity improvements reduce costs by 20% • Inland terminal improvements improve service reliability and reduce road freight costs

Distribution of Benefits:

- To customers by decreasing prices
- To the nation by reducing externalities
- To firms to raise reinvestment levels and improve productivity
- To stakeholders negatively impacted by the strategy
- To invest in implementing the strategy
- To government through reduced allocations from the fiscus

Indirect benefits will flow very heavily towards those who move to respond to the consolidation of the freight network within corridors. As the large providers cut back, opportunities to develop transport businesses that feed the corridors will increase, particularly as branch lines are rationalised. Concessioning and buy-out options will be many, and these can and should be directed towards those who lose employment in the restructuring. The shift in transportation emphasis to road based freight transport around and within the corridors will create significant opportunities for small and medium enterprises, particularly given the relatively low barriers to entry to these businesses. The job creation impact of greater transport efficiency and greater competitiveness is potentially very large, but is dependent on firm level actions. What must be ensured is that, as soon as possible, the cost reductions in the system flow to the customers, and onward to their customers, and are not exclusively harvested by the operators.

Passenger benefits

For passengers, the benefits equation will be more tangible – access, price reductions and service improvements. The Stranded will be mobilised quite rapidly, with the substantial positive impact that this has on their capacity to actively seek employment in either the formal or informal sector. Improved service to all customers will lower transit times with positive productivity impact. The actual cost implications to customers may, in the short term, result in higher costs to those not supported by subsidies.

Additional costs within the system will result from increases in fares to reflect actual costs and the knock-on impact of increases in tolls, parking charges, license fees, increases in the fuel tax and other additional fund sources chosen by government. Redirected funding from subsidy targeting, only subsidising the optimal mode and reducing investments which benefit all road users indiscriminately will create funding for benefit flows. In the short term, these funds can be invested in the corridors and public transport, upgrading public transport, subsidising the Stranded and Survival segments and, importantly, on enforcement. The benefits from enforcement will accrue to all passengers in the form of greater safety, reduced externalities and higher levels of security.

Substantial savings are envisioned from optimising modal economics and densification along corridors, particularly in the reduction of investment required to serve the unserved and underserved. Broad social benefits will flow from the higher levels of coordination across government, particularly with regard to the roll out of housing and infrastructure programmes. Tenders and concessioning will generate funds for the system for longer term investment towards system and component sustainability. At the provider level, the need for massive reinvestment to achieve sustainability has been documented elsewhere in this report, and is a necessary corollary to the consolidations envisioned.

Employment benefits

In terms of employment creation, the strategy will in itself create few jobs in the short term. The consolidation of various providers will, in fact, result in job losses in the short term. However, the impact on competitiveness of the customers of transport can be substantial, and thereby the strategy will contribute very directly to the creation of a large number of sustainable jobs in the economy.

There is a strong likelihood that after consolidation the key providers of transport services will again begin growing their employment bases as they grow with the economy. This is particularly true of the potential contribution of transport to tourism, both domestic and foreign. Once the signaling from tourism in relation to their needs and those of their targeted customers is clear, the capacity of the transport system to respond quickly to these needs will be dramatically enhanced. As mentioned above, the opportunities flowing from the creation of the low cost backbone in terms of feeder activity and the sale of assets can be channeled to those who lose employment in the rightsizing of providers.

Irrespective of how this is handled, the employment creation in low barrier to entry businesses in and around transport will be substantial. Further, as decisions about the road network play out, the opportunities for labor intensive road building and maintenance will be great on roads that are not part of the backbone, the majority of the roads in the country. The benefits of increased social integration made possible by the creation of the low cost backbone will be an important underpinning to the social goals of government.

The Need for Initial Investment to Generate Long Term Benefits

The key issues to deal with, however, remain the need to front-load funding for transformation, so that the benefits outlined above are unlocked as soon as possible. It is here that the strategy is limited by the art of the possible, and where trade-offs and timing decisions will have to be made over the next few years. To the extent that external funding is not available, or the system cannot release sufficient internal funding from rationalisation or restructuring, the implementation program will need to be systematically staged to match outflows to availability. Serious consideration must be given to getting right the balance between pain and gain in the system as the hard realities of fiscal discipline collide with the investment character of the transformation strategy.

19. NEXT STEPS

The implementation and co-ordination agenda points the way to the required next steps for implementing the proposed strategy.

1. *Disseminate and create understanding*
   This document represents the first step of broadcasting the proposed strategy widely amongst stakeholders, steering committee members, operators, infrastructure providers, parastatals, customers, and other government departments. In addition, the NDOT will be holding plenary sessions with different key audiences to provide background and deeper understanding of the strategy, the underlying data, and its processes. Particular emphasis will be placed on communicating the strategy to private operators, to help them clarify their role in it, and to other levels of government, who will be critical to successful implementation.

2. *Develop implementation plans*
   NDOT will begin to draw up implementation plans based on elements of the strategy. In particular, efforts will focus on identifying and developing pilot projects that contribute to major strategic thrusts. Other implementation planning will relate to developing further required data in areas like rural and special needs passengers.

3. *Begin institutional alignment through clarification and prioritisation of national objectives*
   An essential component of implementation planning is the creation of aligned institutions, the lack of which currently acts as a substantial barrier to successful implementation. The first step requires a clarification of national objectives where they are unclear. The proposed strategy rests on some national objectives which have already been clarified through RDP, GEAR, or consultation with other government departments. NDOT will now begin a process of gaining consensus on the national objectives relevant to transport amongst the relevant governmental entities.

There is clearly much more work to be done to translate the vision into reality. Whilst the process will be difficult, and the time period long, implementing the strategy will constitute the most important task in transport over the next ten years and beyond. For the strategy will make real the goals set out in the 1997 Transport White Paper, and complete the very necessary job of transformation that began with the election of our first ever democratic government in 1994. By implementing the proposed strategy, we in the transport sector can contribute to building the new South Africa – one which is strong and competitive, one which is socially integrated, one which provides basic mobility for all citizens, and one which creates the foundation for a just and mobile society.

We hope you will join us in this important endeavour.

Annexure 1: *Moving South Africa* Steering Committee Membership

DOT AND REGIONAL BODIES		
NAME	**DESIGNATION**	**ORGANISATION**
Mr D Patel	Deputy Director-General	National Department of Transport
Mr J J Smit	Deputy Director-General	National Department of Transport
Ms K Pearce	Director: Special Programmes	National Department of Transport
Ms V Lipman	Director of Research and Development	National Department of Transport
Mr K Gordhan	Director-General	National Department of Transport
Mr A Crewe	Director of Communications and Parliamentary Office	National Department of Transport
Mr A Bassa	Group Manager	Airports Services
Mr A Bradshaw	Divisional Manager, Air Traffic	ATNS
Dr G L Dehlen	Consultant	Division of Roads and Transport Technology, CSIR
Dr J H Maree	Director	Division of Roads and Transport Technology, CSIR
Dr Z Z Rustomjee	Director-General	Department of Trade & Industry
Mr Kleynhans	Chief Director	Department of State Expenditure
Mrs B Njobe Mbuli	Director-General	Department of Agriculture
Mr T Burger	Deputy Director-General	Department of Minerals and Energy
Ms M Ramos	Director-General	Department of Finance
Mr Van Wyk	Chief Director	Department of Agriculture
Mr Nkuhlu	Director Restructuring	Department of Public Enterprise
Dr S Hanekom	Director-General	Departmental of Environmental Affairs & Tourism
Mr E Msolomba	Director	SATCC

PROVINCIAL/LOCAL REPRESENTATIVES		
NAME	**DESIGNATION**	**ORGANISATION**
Ms J H Gray	Secretary for Transport	Department of Transport (KZN)
Mr J van der Merwe	Head	Gauteng Department of Transport
Mr A Carstens	Executive Officer: Policy Development & Coordination	Greater Johannesburg Metropolitan Council
Mr D Eadie	Director	Metropolitan Transport Planning
Mr R F Ndlovu	Chief Executive	Provincial Taxi Office

PRIVATE SECTOR REPRESENTATIVES		
NAME	**DESIGNATION**	**ORGANISATION**
Dr V Prince	Managing Director for Transport	Africon
Dr MP Cilliers	Chairman	Africon
Mr J Morrison	Chief Executive	Airlines Association of SA
Mr R E Scoltz	General Manager: Public Affairs	Automobile Association
Mr P van Hoven	Managing Director	British Airways Comair
Mr J Kapeng	Provincial Representative	Free State Provincial Taxis
Mr M Njongwe	Chairperson	KwaZulu Natal Taxi Association
Mr R Hlongwane	President	NAFCOC
Mr N Mathloko	Director	National Transport Forum
Dr P Nagel	Director	Pieter Nagel Logistics
Mr DH Lawrence	Regional Chairman	Rennies
Mr H Lemmer	Chief Director	Road Freight Association of SA
Mr N S Cronje	Chairman	SABOA
Prof Jackie Walters	Chief Executive Officer	SABOA
Mr J Mabaso	President	SABTA
Mrs P Droskie	Manager Infrastructure	SACOB
Mr P J van Aswegen	Executive Manager	Safmarine
Mr R A Stanway	Chairperson	Stanway Edwards Ngomane Associates
Mr E Ndola	Director	Tourism Business Development
Prof Shahia	Head	Transport Economics & Logistics
Mr R Naisby	Operations Executive	Unitrans Limited
Mr R Hlongwane	President	NAFCOC

TRANSNET		
NAME	**DESIGNATION**	**ORGANISATION**
Mr D Sekgobela	Manager, Business Development	Autonet
Ms A Lubbe	Manager: Marketing and Planning	Metro Rail
Mr Z Jakavula	Chief Director	Metro Rail
Mr R Childs	Managing Director	Portnet
Mr WP Burger	Managing Director	Rail Commuters Corporation
Mr J Hare	Deputy Chief Executive	SAA
Mr Z Nomvete	Executive Director	SAA
Mr H Evert	General Manager: Strategic Marketing	Spoornet
Mr S J Macozoma	Managing Director	Transnet
Mr M Mkwanazi	Deputy Managing Director	Transnet
Mr K Mabensela	General Manager	Transnet

UNION AND COMMUNITY		
NAME	**DESIGNATION**	**ORGANISATION**
Mr D George	Assistant General Secretary	FEDUSA
Mr R Ronnie	General Secretary	SAMWU
Mr M J Ngubeni	General Secretary	Sanco National Office
Mr G Simoko	General Secretary	SARHWU
Mr R Howard	General Secretary	TGWU
Ms L Lloyd	Industrial Legal Administrator	ALPA-SAA

Annexure 2: Moving South Africa / Full Project Team

MOVING SOUTH AFRICA / FULL PROJECT TEAM
JUNE 1997 – SEPTEMBER 1998

***Project Manager**: Harald Harvey*

Department of Transport

NAME	BASE ORGANISATION	MODULES	
		Phases 1, 2, 3	**Phases 4, 5**
Althea Belford	Department of Transport	Tourist and Business Passenger	–
André Heydenrych	Department of Transport	Finance	Freight
Athol Moore	Department of Transport	–	Urban Passenger
Chantelle Coetzee	Department of Transport	Tourist and Business Passenger	–
Elvin Harris	Department of Transport	Safety, Health and Environment	Freight
Esther Crouse	Department of Transport	Capacity Building	–
Harald Harvey	Department of Transport	Project Manager – All Modules	Project Manager – All Modules
Ibrahim Seedat	Department of Transport	Urban Passenger	Urban Passenger
Jacob Modubu	Department of Transport	Urban Passenger	–
Jackie Walters	Department of Transport	National Objectives and Microeconomic	–
Ketso Gordhan	Department of Transport	All	All
David Makgahlela	Department of Transport	–	Rural
Lawrence Venkile	Department of Transport	–	Freight
Lize Coetzee	Department of Transport	–	Urban Passenger
Malcolm Mitchell	Department of Transport	All	Freight
Mo Zungu	Department of Transport	Rural and Long Distance Passenger	Rural
Nathan Wilson	Department of Transport	Finance	Freight
Nonhlanhla Nyathikazi	Department of Transport	Urban Passenger	Special Needs

Paul Pule	Department of Transport	Capacity Building	_
Stanley Khosa	Department of Transport	-	Rural and Long Distance
Vicky Monaghan	Department of Transport	Institutional and Regulatory	Cross Cutting
Vivienne Lipman	Department of Transport	Rural and Long Distance Passenger	Rural

CSIR

NAME	BASE ORGANISATION	MODULES	
		Phases 1, 2, 3	**Phases 4, 5**
Andrew Shaw	CSIR	Urban Passenger	Urban Passenger
Clifford Naudé	CSIR	Finance	Cross Cutting
Diamond Motha	CSIR	Rural and Long Distance Passenger	_
Emma Netshilulu	CSIR	Administration	_
Esbeth van Dyk	CSIR	_	Freight
George Dehlen	CSIR	Institutional & Regulatory	Freight
Laverne Shepperson	CSIR	Freight	Freight
Mac Mashiri	CSIR	Rural & Long Distance Passenger	_
Rodger Smith	CSIR	Rural & Long Distance Passenger	_
Steve Ballot	CSIR	Safety, Health & Environment	_
Roland Mirillees	CSIR	Finance	_
Tuelo Mogashoa	CSIR	Safety, Health & Environment	Cross Cutting
Kgaugelo Masedane	CSIR	Administration	_

Other Organisations

NAME	BASE ORGANISATION	MODULES	
		Phases 1, 2, 3	**Phases 4, 5**
Willie Oosthuisen	RFA	-	Freight
Etienne Coetzee	SABOA	Urban Passenger	Urban Passenger
Koven Moodley	Spoornet	Freight	Freight
Nomvula Maquta	Spoornet	_	Freight
Marius Luyt	Transnet	Macro-economics	Freight
Rudewaan Arendse	ASCH	Freight	Special Needs

Consultants

NAME	BASE ORGANISATION	MODULES	
		Phases 1, 2, 3	**Phases 4, 5**
Keith Coleman	Monitor Company	All	All/Freight
David Boyce	Monitor Company	Rural & Long Distance Passenger/Tourism	_
David Meyerovitz	Monitor Company	_	Urban Passenger
Illana Melzer	Monitor Company	Freight	
Jason Frank	Monitor Company	Finance	_
Matthew Kentridge	Monitor Company	_	All Modules
Mike Kubzansky	Monitor Company	All Modules	_
Steve Krawciw	Monitor Company	Safety, Health& Environment/Macro-economics	Cross Cutting
Niven Postma	Monitor Company	_	Freight
Ralph Judah	Monitor Company	All/Urban/Rural	All/Cross Cutting
Rolfe Swinton	Monitor Company	_	Cross Cutting
Rob Gerhard	Monitor Company	Urban Passenger	_
Christian Lawrence	Mercer Management Consulting	Freight	_

Christopher Logan	Mercer Management Consulting	Finance/Institutional & Regulatory	Freight
Jeremy Drew	Mercer Management Consulting	Urban Passenger	Urban Passenger
Jorge Kogan	Mercer Management Consulting	All	All
Mitch Steller	Mercer Management Consulting	Freight	-
Ron Crompton	Mercer Management Consulting	All/Freight	All/Urban
James Brennan	Mercer Management Consulting	_	Freight
Roland Henneberger	Mercer Management Consulting	_	Freight
Danielle Crouse	Letsema	Finance	Urban Passenger
Derek Thomas	Letsema	Institutional & Regulatory	Freight
Edwin Ritchken	Letsema	Capacity Building	_
Jill Seseko	Letsema	Information Audit	_
Mandla Mlotshwa	Letsema	Rural and Long Distance Passenger	_

Administration

NAME	BASE ORGANISATION	MODULES	
		Phases 1, 2, 3	**Phases 4, 5**
Pat Loots	Executive Focus	Administration	Administration
Annabelle Davids	CSIR	Administration	Administration
Catherine Moumakwe	Monitor Company	Administration	Administration
Jennifer Del Gioirno	Monitor Company		Production Design
Theresa Starmer	Monitor Company		Production Design
Fred Spanjaard	Monitor Company		Production Design