THE CONTRIBUTION OF TRANSPORT GOVERNANCE TO SOCIO-ECONOMIC DEVELOPMENT IN SOUTH AFRICA

JAMES CHAKWIZIRA & MAC MASHIRI

CSIR Built Environment, P. O. Box 395, Pretoria 0001
Tel: +027 (0)12 841 3722
Fax: +027 (0)12 841 4054
Email: jchakwizira@csir.co.za

ABSTRACT

This paper discusses the contribution of transport governance to socio-economic development in South Africa. It is premised on the argument that transport governance is a higher, more complex and inclusive phenomenon than transport government. The paper begins by outlining the transport governance framework in South Africa with a view to highlighting inherent systemic strengths and weaknesses. It then unravels the legal, institutional and environmental basis upon which transport policy and practice occurs. This is followed by an analysis of transport governance gaps and 'growing pains', informed by local and international experience. The paper draws heavily from creative reviews of secondary data and interviews with key government and development agencies. The primary argument advanced in the paper is that enhanced transport governance does not only provide value-add to, but it could also be the lynchpin for a sustainable transport industry.

Keywords

Transport governance, intervention measures, civil society, transport industry, South Africa

1 INTRODUCTION

1.1 Background

This paper is concerned with the contribution of transport governance to socio-economic development in South Africa. The South African Constitution (1996) includes an innovative chapter on 'cooperative government'. This is conceived as ensuring good relations between South Africa's three spheres of government. The Reconstruction and Development Programme (RDP) document made implicit references to the notion of responsive transport governance through the apparent support for community-based development and locality based initiatives (African National Congress, 1994). The government's objective of increasing economic growth rate to six percent over the medium term (albeit overtaken by the global financial meltdown) can be seen as a commitment towards taking South Africa to a higher developmental level (ASGISA, 2006). However, over the last decade or so since the RDP, transport governance has remained a tail ender if not obscured in the South African transport planning terrain. And yet, transportation

underpinned by good governance could be one of the most potent vehicles under-girding the quest to achieve sustained economic growth and development in contemporary South Africa (Mashiri et al, 2008). This view is corroborated by the Development Bank of Southern Africa [DBSA] (2005) which contends that one practical way of contributing to economic growth and achieve high socio-economic development impact is sustained investment in infrastructure, freight and logistics and public transport. However, empirical estimates of the impact of infrastructure on economic growth vary widely. While many studies for example, indicate the important role played by infrastructure in raising productivity, different methodologies and econometric techniques have often been used in these studies, and these are a source of much controversy (Mitra et al, 2002). In this regard, DBSA (1998) reports several relatively high estimates (ranging from 0.15 to 0.33.) of the elasticity of output with respect to infrastructure investment in South Africa.

Transport economics references often present links between transport, growth, income and governance as obvious and therefore requiring no further investigation. This could explain why the subject area is relatively under-researched (Preston, 1998). The concept of transport governance is closely linked to the theory of social capital. The OECD defines (transport governance) social capital as ‘‘(transport governance) networks, together with shared norms, values and understandings that facilitate co-operation within and among groups’’ (Helliwell, 2003, p. 9). According to Statistics South Africa (2005), transport, storage and communications contributed 9.5 percent of the gross domestic product in 2004. The total income for the transport industry in 2006 was R159 551 million (Statistics South Africa, 2007). The largest contributor to the total income was ‘air transport’ (R33 772 million or 21.2 percent), followed by ‘freight transport by road’ (R29 297 million or 18.4 per cent) and ‘activities of other transport agencies’ (R26 752 million or 16.8 percent). The total income represents an increase of 7.1 percent per annum over the income reported to the corresponding survey of 2002 (R121 193 million).

With regard to transport governance, the White Paper on Local Government (1998) introduces the concept of “developmental local government”, defining it as: “local government committed to working with citizens and groups within the community to find sustainable ways to meet their social, economic and material needs, and improve the quality of their lives.” Indeed transport governance is central to facilitating the realisation of a developmental local government, yet this issue is not mentioned specifically and explicitly in policy documents and legislation. However, the adequacy of existing transport governance institutional arrangements and strategies for local government to facilitate the implementation of action plans that resolutely deal with local economic development has come for serious questioning of late by some critics. In 2007, a panel of experts brought together to discuss and examine the critical question of infrastructure (including transport) and development in South Africa, identified 25 key factors that combined known facts about the future and critical uncertainties that are plausible yet unpredictable. Governance as a factor features strongly as an area requiring special attention and focus for enhanced transport delivery and services (DBSA, 2008). Other factors that feature strongly in the same study include infrastructure investment, political will, capacity (human), income and wealth distribution, all of which have strong governance linkages and overtures.

The infrastructure sector is often viewed as susceptible to corruption (World Bank, 2008; gTKP, 2008). Making up between ten and twenty percent of a country’s budget, transport infrastructure is a major expenditure item (South African Department of Transport, 2008). Corruption in transport projects can account for as much as five to twenty percent of transaction costs (gTKP, 2008). This, on top of similar levels of inefficiency, means that collectively strengthening governance and capacity in the transport sector could potentially

save ten to forty per cent of overall spending in the sector (World Bank, 2008). As well as improvements in resource allocation, enhanced governance can reduce mortality and injury through safer, cleaner and more accountable delivery of transport infrastructure and services.

Good governance, inclusive transport and socio-economic development are therefore closely intertwined (Keefer & Knack, 1995). Inclusive transport fosters growth and enhanced contribution of civil society in promoting a more equitable distribution of transport infrastructure assets and services including their accessibility (Mashiri et al, 2008). Transport governance can perhaps be viewed as ‘‘the single most important factor in eradicating isolation, deprivation, access problems of marginalised, peripheral and disadvantaged communities in developing countries (United Nations, 1999; Mashiri et al, 2007; Chakwizira, 2008). However, empirical evidence on the contrary exists. UNDP (2003) presents democratic, efficient functioning governments institutions as being not immune from rampant poverty or inequality (UNDP, 2003). It is thus important to distinguish between transport government as distinct from transport governance. The former refers to state institutions legislated and/or gazetted through acts of parliament to deliver required goods and services. The latter relates to the processes and systems of transport flows and networks between and among many actors and stakeholders impacting on the ultimate quality and quantity of transport infrastructure and services provision (UNDP, 2000; Chakwizira & Mashiri, 2008). Consequently, this paper stretches the concept of transport governance beyond the modernisation theory. This theory conceives transport governance within the confines of state and institutional operations (Chakwizira & Mashiri, 2008).

1.2 Purpose of the study

This paper, in making a contribution to the transport governance debate, seeks to further narrow the disconnect between modernisation theory and social theory. This is achieved through adopting a transport governance approach that showcases transport infrastructure and services bridging knowledge, information and civil society driven interventions. The paper asserts that such an approach could assist in arresting negative growth and development indicators fuelled by poor transport governance in developing economies such as South Africa.

1.3 Organisation of the paper

While *section one* has introduced the subject matter of this paper, *section two* will explain the research methodology employed in teasing out the socio-economic contribution of transport governance to development. *Section three* then discusses the issues and challenges relating to the transport governance framework. *Section four* provides concluding remarks and recommendation for better transport governance in South Africa.

2 STUDY APPROACH

2.1 Methodology

This study employed a repertoire of methods. Extensive desktop analysis was undertaken focusing on the thematic area of transport and governance worldwide. Creative literature reflection and innovative analysis enabled the categorisation and reduction of transport governance key themes in South Africa into a set of common issues for discussion. In addition, the authors also used the problem tree and brainstorming technique to isolate

and situate the transport governance theme in the context of South Africa's current development agenda. This process produced invaluable inputs towards the generation of transport governance policy intervention options for South Africa. Furthermore, reflective thinking based on practical experience gained by the authors working in transport departments of local, central, regional and international research and development institutions in Sub-Saharan Africa was also factored into the discussion. Key informant and stakeholder views add to the qualitative first hand information sources. A transport governance benchmarking opinion score-card system was adopted in assessing the transport governance performance of the South African transport sector vis-à-vis similar and contrasting economies worldwide. This purposive sampling had the effect of auditing and providing a platform for critiquing the existing transport governance system with a view to generating pointers for its enhanced contribution to socio-economic development in South Africa.

2.2 Contribution of transport governance to socio-economic development

In many countries, roads and highways provide the dominant mode of land transportation. They form the backbone of the economy, often carrying more than 80 percent of passengers and over 50 percent of freight in a country, and providing essential links to vast rural road networks (World Bank, 2008). Transport improvements could lead to a reduction in commuting, travelling and freight costs (Chakwizira, 2007). Transport improvements could also unlock development land, for example, the road and rail investments that preceded development of the Rand region in South Africa. Transport investments may also bring assets into production, for example the development of tourism in remote areas.

Transport infrastructure and services are among the most important public assets in any country. Improvements to roads bring immediate and sometimes dramatic benefits to communities through better access to hospitals, schools, and markets; greater comfort, speed, and safety; and lower vehicle operating costs (Mashiri et al, 2007). For these benefits to be sustained, however, transport infrastructure and services improvements must be followed by well-planned programs of maintenance. Table 1 below presents a summary of studies from South Africa and elsewhere exploring the links between transport infrastructure, local economic development and governance. The transport governance knowledge and technology strand is still under-researched, and the nexus, still little understood (Chakwizira, 2008).

2.3 Importance of transport governance

Internationally, mixed experiences of public transport governance systems exist. However, the poor understanding of public transport governance arrangements belies its importance. In 2005, a team of experts from the University of Toronto in Canada reviewed the factors that contribute to 'best practice' in urban transport and concluded that the most critical requirement is effective governance – more important even than finance, infrastructure and urban land-use planning (Kennedy et al, 2005). A failure in governance leads to poor decision-making processes, compromises accountability and encourages public transport infrastructure and services network that exhibits sub-optimal performance (Chakwizira & Mashiri, 2008).

Internationally, transport reviews at the local level concluded that the impacts of transport investments on local economic development are limited (Nelson et al, 1994). However, urban rail investments tend to maintain the primacy of the central business district

(Cervero, 2003). A countervailing argument suggests that new transport infrastructure may just as easily promote outward investment from a disadvantaged region as it is also capable of promoting equally inward investment. Another, perhaps more intriguing perspective is that economic development that is attracted may simply be development displaced from an adjacent area. In recent times, DBSA (1998) has persuasively argued that public investment could contribute immensely towards socio-economic development if targeted at core infrastructure such as highways, airports, mass transit, power supply, water and sewerage.

2.4 The missing link in transport governance

However, what is missing from this review of literature is a solid explanation as to what comes first, transport investment then economic development or economic development then transport investment or good transport governance before both transport investment and economic development? This perhaps underlines why investigating causality is still uncharted territory. However none of these studies specifically and explicitly unpacks the contribution of transport governance to socio-economic development and growth worldwide. This paper further posits that the content and context of transport governance has undergone metamorphosis over the years, bringing to the fore challenges as well as creating new opportunities for public involvement.

3 FINDINGS AND DISCUSSION

3.1 Profiling transport governance perspectives and experiences

This section discusses different transport governance perspectives and the emergence of alternative ways of resolving and acting on transport governance challenges and issues in South Africa.

Table 1: Summary of international and South African studies examining links between transport infrastructure, local economic development & governance

AUTHOR	GEOGRAPHIC SCALE	INFRASTRUCTURE	CONCLUSIONS
Botham (1980)	28 Zones (UK)	Change in national highway stock.	Small centralizing effect on employment.
Briggs (1981)	Non-metropolitan countries (US)	Presence on inter-state highway.	Presence of interstate highway is no guarantee of rural development.
Cleary and Thomas (1973)	Regional level (UK)	New eustrial crossing.	Little relocation but changes in firm's operations.
Dodgson (1974)	Zones in UK (North)	New motorway.	Some relationship between transport costs and employment growth.
Eagle & Stephanedes (1987)	87 Counties (US States)	County highway expenditure.	No relationship with employment growth.
Evers et al (1987)	North-West Europe (7 Zones)	High speed rail.	Some effect on employment growth and distribution.
Forrest et al (1992)	Metropolitan area (UK)	Light rapid transit.	Good for renewal of blighted property.
Judge (1982)	Regional level (UK)	New motorway.	Very limited economic impact.
Langley (1981)	Highway corridor (US)	Highway.	Devalued property area.
Mackie and Simon (1986)	Regional level (UK)	New eaustrial crossing.	Small overall effect – some reorganisation of operations.
Mills (1981)	Metropolitan areas (US)	Presence of orbital highways.	No significant effect on location patterns.
Moon (1986)	Metropolitan areas (US)	Highway interchanges.	Existence of inter-change village identified.
Pickett & Perrett (1984)	Urban District (UK)	Light rapid transit.	Properties close to the line benefit.
Stephenedes (1990)	87 counties (US State)	Highway investment.	Could affect economic development – depends on country's economy.
Stephenedes and eagle (1986)	87 counties (US State)	County highway expenditure.	Some positive association with employment levels.
Watterson (1986)	Metropolitan area (US)	Light rapid transit.	Weak effects on job and household location.
Wilson et al (1982)	Regional level (Canada)	Highway investment.	Some regional economic development identified.
Perkins, (2005)	National (RSA)	Economic Infrastructure Investment.	Relationship between economic infrastructure and economic growth is unidirectional. Inadequate investment in infrastructure can create bottlenecks and opportunities for promoting economic growth could be missed. Policymakers should focus on choosing or encouraging the right type of infrastructure at the right time.
South African Department of Transport (2002)	National, regional and Local level. National Rural Transport Strategy.	Rural transportation infrastructure and services.	Lack of an appropriate intervention framework and strategy distorts and impedes transport interventions acting as a catalyst for rural development and generating prosperity.
South African Department of Transport (1998)	National, regional and Local level.	Moving South Africa - All inclusive South African transportation agenda for the new millennium	Transportation infrastructure investment and interventions in the new South Africa need to be informed by an authentic audit of the existing situation.
South African Department of Science & Technology – (current)	Eastern Cape - Port St Johns - hiking/biking trail.	Local people as an invaluable resource and asset in implementing transport tourism infrastructure and services	Transport projects can be used as an opportunity to nurture construction and maintenance skills in a community and in the process alleviating poverty through income during the construction period as well as generating income from the resulting tourism facilities.
DFID:UK (2005)	Republic of South Africa – Municipal and Province disabilities demonstration project.	Low cost technologies for accessible information on public transport	Access and livelihood opportunities for persons with disabilities can be improved through improving their access to road based public transport.
Chakwizira, Mashiri & Marrian (2008)	Southern Africa Regional Spatial Development Focus	Spatial focus and impact of infrastructure and non-infrastructure investment interventions.	Infrastructure and non-infrastructure development and growth interventions are not uniformly spread (benefits and distribution) polarise spaces, people and regions.
DFID:UK (2005)	Province of the Eastern Cape and continental wide (Asia, Africa & South America).	Collaborative transportation provision, delivery and sustainability approaches.	Generation of a methodology for improving children's mobility and access with children as one way of seeking to achieve the Millennium Development Goals.
CSIR: RSA (2005)	Province level – Eastern Cape	Using labour based maintenance in rural infrastructure provision and development (construction of the Amadiba road).	Labour based technology can be used as a way of poverty alleviation and skills transfer in rural areas.

AUTHOR	GEOGRAPHIC SCALE	INFRASTRUCTURE	CONCLUSIONS
Mpumalanga DoT (2007-08)	Albert Luthuli Local Municipality – rural areas	Low level technology infrastructure intervention and services in Albert Luthuli Municipality.	The approach can be useful in the provision and implementation of low cost access and mobility interventions.
Road Traffic Acts and Regulations (since establishment of the Republic of South Africa) The Constitution of South Africa Development Facilitation Act Local Government Act Local Government: Municipal Demarcation Act Local Government: Municipal Structures Act Draft Municipal Systems Act (2003). Road Transportation Act Legal Succession to South African Transport Services Act Transport Appeal Tribunal Act Cross-Border Road Transport Act Urban Transport Act National Land Transport Bill, 2008.	National, regional and Local level.	Address the traffic and transportation land, air, sea and underground concerns. Address institutional and legal structural establishment and operational issues. Provide a mandate and stipulates the nature of delivery and services that respective transport governance institutions should discharge. Regulate traffic provision and services in South Africa. Provide for the establishment of transport planning and management authorities in South Africa. Provides for the developmental local government state.	Legislation and statues are effective tools in controlling, facilitating and regulating the development and management of all forms of transportation products and services.
Transportation and communications Policy & Strategy Documents – Republic of South Africa (since 1994)	National, regional and Local level.	Funnels transportation and communication investment decisions according to the dictates of policy and strategy.	Seek to provide for integrated, coordinated and all inclusive transport governance in the country. Provide guidance and decision making framework for transportation and communications delivery and services.
Department of Transport, Republic of South Africa (undated)	National, regional and Local level.	A transport infrastructure and services synopsis on the concept of transport authorities in South Africa.	Transport Authorities could be one way of strengthening and encouraging better transport governance delivery and services.
Mpumalanga Department of Transport (2005 to current)	Province level but targeting former homelands and previously disadvantaged rural remote and deprived regions.	*Siyatentela* rural low volume gravel roads community based labour intensive maintenance projects.	Crafting and implementing a conscious extended public works program that includes civil society contribution and partnership in developing local level inter and intra-rural access and mobility infrastructure is one way of joint transport governance provision, delivery and sustainability approach. The ABCD (Asset Based Community Development) approach, sustainable livelihoods approach and integrated rural mobility and access approach can be synergised for increased development impact and returns in rural development. Indigent poor rural households can gain skills and improve livelihood sustenance through targeted inclusive rural infrastructure and services maintenance programs. This can provide alternative pathways out of poverty for previously disadvantaged and marginalised community members.
Kwa-Zulu-Natal Province (2001 – current)	Province level but targeting former homelands and previously disadvantaged rural remote and deprived regions.	*Zibambele* rural low volume gravel roads community based labour intensive maintenance projects.	
Limpopo Province	Province level but targeting former homelands and previously disadvantaged rural remote and deprived regions.	*Gundolashu* rural low volume gravel roads community based labour intensive maintenance projects.	

Sources: Chakwizira & Mashiri, 2008; Nelson et al, 1994; Preston, 2001

3.2 The history of South Africa's transport governance infrastructure

South Africa's total road network is estimated at approximately 754 000 kilometres, 9 600km of which are surfaced national roads. Around 2 400km of the roads in the country are toll roads (Mokonyama & Kirsten, 2007). While the South African Department of Transport (SADOT) is responsible for overall policy, road-building and maintenance is the responsibility of the South African National Roads Agency as well as the nine provinces and local governments (SADOT, 2008). However, the performance of local municipalities at the local level in addressing transport problems still remains a challenge. Although the concept of transport authorities has been tried in South Africa by *e*Thekwini with some reasonable success, the concept is not fully established. Invariably, the concept is not provided for explicitly by the 2008 Land Transport Bill. Elsewhere in the World, strong urban and regional transport authorities have been established on the back of strong funding and other resources.

South Africa has an extensive rail network which connects with networks in the sub-Saharan region. State-owned Transnet Freight Rail is the largest railroad and heavy haulier in southern Africa, with about 22 000km of rail network, of which about 1 500km are heavy haul lines (SADOT, 2008). The company's rail infrastructure, which connects the ports with the rest of South Africa, represents about 80 per cent of Africa's total (Mokonyama & Kirsten, 2007). The concept of transport governance franchising could be a worthwhile introduction in this sector as a way of improving operational efficiency and sustainability. The transport governance policy issue relating to the debate between rail and road still remains a topical issue. Of late, the emerging subject of freight in cities has begun to receive some attention, which is a step in the right direction. The bigger question of the Cape to Cairo rail and road link long identified as a priority still remains largely unresolved. The impasse could emanate from challenges of multi-level transport governance and funding across different states and regions in Africa.

The South African Rail Commuter Corporation operates the Metrorail commuter services in Cape Town, the Eastern Cape Province, Durban, and Greater Johannesburg and Tshwane. The Gautrain, an 80km rapid rail network, will connect Johannesburg, Tshwane and OR Tambo International Airport, easing congestion on the Johannesburg-Tshwane highway by offering commuters a safe and viable alternative to road travel (Chakwizira, 2007). It is estimated that the Gautrain will create about 33 000 jobs by the end of 2009. Gautrain's 24 train sets of four rail cars each (96 rail cars in total) will travel at 160km/hour, 18 hours a day, together making around 135 000 passenger trips a day. Together with the Rea Vaya Bus system, the Gautrain will complement the existing public transport system. However, this paper argues that without a transport governance policy on motorisation which, among others, would seek to address traffic congestion in Gauteng, such interventions are unlikely to enjoy much traction in terms of finding solutions to the region's transport problems.

Overall transportation governance policy has shifted from a history of centralised control, to creating more action space for the private and non-state

sectors. This has taken the form of agencies, concessions and public-private partnerships. Most countries conceive of and assume primary responsibility for transport as a public good. This is justified in terms of promoting balanced economic growth and development while making sure that there is limited state intervention in infrastructure provision by the private sector. However, critics argue that South Africa's current transport system has declined if it is benchmarked with international trends in terms of creating more action space for private sector involvement in infrastructure provision and delivery (DBSA, 2008). On the other hand, some commentators argue fervently that perhaps increased government involvement and investment is the correct position at this point in the development trajectory of South Africa. Copley (2005) quoted in DBSA (2008) argues that over the past decade in South Africa, 95 percent of transport infrastructure investment has come from the public sector and five percent from the private sector, generally in the form of public-private partnerships. Clearly, there appears to be a substantial market for greater involvement and contribution in the transport sector by non-state sectors.

3.3 Transport governance infrastructure investment

Transport governance infrastructure investment effects are extremely difficult to measure (Fedderke & Luiz 2005). Data compiled by Estache and Goicoechea (2004) lists a number of infrastructure quality measures across countries. Table 2 below indicates that electricity transmission and distribution losses in South Africa seem less severe against comparable states and income-groups across the world. However, the data was last updated in 2002, before the 2005 and 2006 electricity supply shortages in South Africa. One reason for these supply shortages was the apparent neglect of maintenance of the transmission lines and forward planning. This raises the transport and communications governance issues of integrity, accountability and transparency.

Table 2: Measuring quality in South Africa's infrastructure performance

Country/Region	Electricity Transmission and distribution (losses (% of total output)	Phone fault (reported/ 100 main lines)	Travel time to work, main cities (minutes/one way work trip)	Paved Roads (% of total roads)
South Africa	**8**	**48**	**35**	**21**
Sub-Saharan Africa	19	57	34	25
Middle East and North Africa	14	23	25	56
South Asia	22	97	27	38
East Asia & Pacific	12	39	36	32
Latin America & Caribbean	18	24	29	36
Europe & Central Asia	18	34	29	76
Low-income	22	64	33	30
Middle-income	15	25	29	52
Upper middle income	14	18	29	57
High-income	6	11	32	82
World	**14**	**37**	**31**	**50**

Source: Estache & Goicoechea (2004)

Phone faults per 100 mainlines is the only measure of the quality of telecommunications infrastructure, although it obviously does not measure the quality of all telecommunication infrastructure. South Africa (48) is significantly worse than the world average (37) and the average of middle-income countries (25). From a transport governance perspective, does this translate

into increased transport costs as people can not be adequately serviced by telecommunications? Put differently, does this imply that the South African transportation and telecommunication industry is failing to efficiently use this technology as a way to reduce the need for physical mobility and accessibility to socio-economic opportunities? Are South Africans automobile captives?

Probably the most important measure of infrastructure quality is the travel time to work in the main cities (measured in minutes of a one-way work trip). South Africa (35) performs very poorly compared to all other income-groups (even higher than low-income countries at 33) and the world average of 31. The transport governance question that this raises is the legacy of apartheid spatial planning and the travel and transport burden that is placed especially on the shoulders of low income earners. This corroborates the findings of the SADOT National Household Travel Survey of 2003 that transport expenditure of poor households is over 20 percent, way above the World Bank stipulated figure of 10 percent. Despite recent reports in nation wide newspapers suggesting that the number of pro-poor people are decreasing, is this really true in light of the fact their income is eroded by transport costs, not withstanding the bus subsidies in existence. One key informant summed up this observation as follows:

"…Until public transport costs are pulled down to as close as the 10 percent of disposable monthly income stipulation by the World Bank, the daily pain and grief by commuters who have to board two or more buses/taxi from home to work is reversed completely or at least the agony and trouble of the multiple interchanges made less burdensome, then the current transport governance is flawed and crying out for help. Surely, tell me why should a person's trip to work be more that 65 minutes of travel?" (Verbatim extract of an interview script with a minibus taxi association representative in Gauteng Province, 15 November, 2008).

Paved roads as a percentage of total roads are another transport measure of infrastructure quality. South Africa (21 percent) is significantly below the world average (50) and of all other income-groups. Bogetic and Fedderke (2006) argue that this figure might be too extreme. Using Perkins' (2003) data, paved roads are calculated to be 31 percent of total roads. However, even given this improved figure, South African road quality is far below its peers. This situation requires urgent attention especially in rural and previously disadvantaged areas (Mashiri et al, 2007). This paper argues that all this can be traced back to malfunctioning, misaligned or disconnected transportation governance systems and processes that require continuous and dynamic re-working.

3.4 Selecting sustainable transport governance indicators in South Africa

In seeking to generate different categories of sustainable transport governance planning in South Africa, it may be neccesary to incorporate the work of Litman (2008) into the analysis. Litman (2008) proposes possible disaggregations and transport indicators, which for the purposes of this paper have been modified as follows:

- A = Transport governance universal indicator (TGUI).

- B = Transport governance discretionary indicators (TGDI).
- C = Transport governance special need indicators (TGSNI).

In terms of the opinion scoring card system, key informants from the transportation industry were requested to benchmark South Africa's transport governance indicators and give their perception on whether a gap existed or not. Table 3 presents the results of the findings.

Table 3: Transport governance sustainability indicators opinion scorecard system for South Africa
Sample Size N=25

Category	Subcategory	Indicator	Disaggregation	Rating	Gap	
					Yes (✓)	No (×)
Travel Activity	**Vehicles**	Motor vehicle ownership	By type of vehicle, owner demographics, location	**A**	✓	
	Mobility	Motor vehicle travel	Trip type, traveller type, travel	**A**	✓	
	Mode Split	Portion of trips by auto, public transit and non-motorised modes	Trip type, traveller type, travel conditions	**A**	✓	
Air Pollution Emissions	**Emissions**	Total vehicle emissions	Type of emission, mode, location	**A**	✓	
	Air Pollution Exposure	Number of days of exposure per year	Demographic groups affected	**A**	✓	
	Climate Change	Climate change emissions (CO_2, CH_4)	Mode	**A**	✓	
	Embodied Emissions	Emissions from vehicles and facility construction	Type of emission and mode	A	✓	
Noise pollution	**Traffic noise**	People exposed to traffic noise above 55 Decibels equivalent	Demographic group, location, transport mode	B	✓	
	Aircraft noise	People exposed to traffic noise above 57 Decibels equivalent	Demographic group, location, transport mode	B	✓	
Traffic Risk	**Crash Casualties**	Crash Deaths and injuries	Mode, road, type and cause of collision	A		×
	Crashes	Police reported crashes	Mode	A		×
	Crash Costs	Traffic crash economic costs	Mode	B		×
Economic Productivity	**Transport Costs**	Consumer expenditures on transport	Mode, user type, location	A	✓	
	Commute Costs (time and money)	Access to employment	Mode, user type, location	A	✓	
	Transport Reliability	Per capita congestion costs	Mode, location	B	✓	
	Infrastructure costs	Expenditure on Roads, public transit, parking, ports etc	Mode, location	A		×
	Shipping costs	Freight Transport efficiency	Mode, geographic area	B		×
Overall Accessibility	**Mobility Options**	Quality of walking, cycling, public transit, driving, taxi etc	Trip purpose, location, user	A	✓	
	Land use accessibility	Quality of land use accessibility	Trip purpose	B	✓	
	Mobility substitutes	Internet Access and delivery service quality	Trip purpose	B	✓	
Land use impacts	**Sprawl**	Per capita impervious surface area	By location and type of development	**B**	✓	
	Transport land consumption	Land devoted to transport facilities	By mode	**B**		×
	Ecological and cultural degradation	Habitat and cultural sites degraded by transportation facilities	Type of habitat, resource, location	**B**		×
Equity	**Affordability - Transport**	Portion of household budgets needed to provide adequate transport	Demographics especially disadvantaged groups	**A**	✓	
	Affordability - Housing	Affordable housing accessibility	By demographic group, especially low income and disabled groups	**C**	✓	
	Basic accessibility	Quality of accessibility for people with disabilities	By geographic area, mode, type of disability	**B**	✓	
Transport Policy & Planning	**Pricing Efficiency**	Cost-based pricing	By mode, type of cost (road, parking, etc)	**B**		×
	Strategic Planning	Degree to which individual planning decisions support strategic goals	By mode, agency	**B**	✓	
	Planning Efficiency	Comprehensive and neutral planning	By mode, agency	**C**	✓	
	User Satisfaction	User survey results	By group (disabled, children, low income..)	**B**	✓	

Source: Adopted Chakwizira, 2007; Litman, 2008

In terms of motor-car ownership in South Africa, respondents overall saw a gap. The main reason was that motorisation is continuing to increase in the absence of a robust motorisation policy. And yet there is no doubt that private car ownership is an inefficient mode of travel.

In terms of mobility, the respondents also ranked it as an area where a transport governance gaps exist. The argument was that the spatial legacy of

apartheid encourages multiple trips and increased journey lengths and times. The fragmented urban form of metropolitan areas of South Africa belies the benefits of compact cities and it is certainly not energy efficient.

Regarding air pollution, the lack of a clear strategy on motorisation rates and climate change teething challenges in the transport sector were cited as reasons why gaps still existed. It was further argued that marrying transport and climate change is still an emerging field with developed countries still struggling to identify and decisively act on the link between the two.

In terms of traffic risks, South Africa was commended for having a sound and competitive safety regime in place. Although challenges existed in this domain, the respondents highlighted that police patrol and surveillance systems, eNATIS, the recent experiments with some form of intelligent transport information systems, driver safety and awareness campaigns all pointed to a good track record. The overloading traffic and safety strategy, overloading traffic control points, road safety marking and construction standards are comparable to the best in the world.

Turning to economic productivity, the panel of key stakeholders ranked this variable as a gap in the transport governance system. It was argued that more than 20 percent of a commuter's monthly income was spent on transport, way above what the World Bank norm of ten percent. Transport reliability was also found wanting in the country. A number of remote rural places had limited to non-existent access to reliable all year round transport, while in urban areas the public transport service was skewed towards only day times and quite erratic in the evenings. Services are more frequent in high density areas.

In terms of accessibility of the system, a gap was also identified. Non-motorised transport was singled out as not properly developed and provided for. In essence, urban areas were predominantly designed for automobile use. The prevailing transport infrastructure systems architecture was considered pedestrian unfriendly. Compared to a country such as Colombia, where its capital Bogota is endowed with pedestrian and bicycle highways, South Africa fared badly in this regard.

Regarding equity, the South African transport governance system was also found wanting. Scholar transport and universal transport were identified as challenges. The problem of low income houses located far away from areas of economic opportunity was raised once again as an issue.

In conclusion, transport policy and planning are seen as having gaps. The argument advanced by the respondents was that if the major indicators and components of the transportation system in South Africa have some form of governance challenges, then by extension, the transport governance system had gaps. Some raised concerns relating to the preoccupation with street renaming, for example, in *e*Thekwini ahead of more challenging transport governance issues in the country which saved to highlight the lack of depth and breadth in the transport governance philosophy of South Africa. The preceding analysis corroborates the South African Institute of Civil

Engineering (SAICE) “transport report findings” on the state of South Africa’s infrastructure (see DBSA, 2008).

Perhaps, the analysis emanating from Table 3 presents interesting transport governance scenarios for South Africa. What, how and in what ways can other transport infrastructure provision and delivery interventions such as exploring the concept of franchising contribute towards enhanced transport governance in the sector? Is it feasible, for example, for South Africa to generate its own typology of sustainable transport governance ranking and classification? All these are questions that have not been answered or properly interrogated. In addition, the preceding sustainable transport governance framework of analysis excludes transport governance as an independent indicator. Instead the analysis presents transport governance as being implicitly and adequately provided for by the current legislation. However, the paradox of such interpretation is that the foregoing analysis highlights a lack of strong transport governance grounding in South Africa’s conceptual and analytical framework.

3.5 Towards a transport governance sustainability framework: Assessment indicators

One of the major findings of this study is the need to entrench a transport governance sustainability indicators assessment framework in South Africa. In this regard, South Africa’s transport system should not waste resources through ‘reinventing the wheel’. The study fully recognises existing initiatives by the World Bank in countries such as Kenya, Ghana, Bangladesh, China and Pakistan that have been tested with great success. Transport governance assessment indicators in South Africa can use this as a departure point in generating context-specific indicators. For comprehensive and balanced transport governance analysis in South Africa, it is recommended that transport governance indicator sets should include indicators from each of the major categories of issues, such as those listed in Table 4 below. These are in no way meant to be exhaustive.

Table 4: Sustainable transport governance issues

ECONOMIC	SOCIAL	ENVIRONMENTAL	GOVERNANCE
Accessibility quality	Equity/Fairness/Empowerment	Air pollution	Transport Monitoring Indicators Framework
Traffic congestion	Impacts on mobility/disadvantaged/elderly/Youths	Climate change	Transport Governance & Anti-Corruption Strategy
Infrastructure costs	affordability	Noise pollution	Transport Public Expenditure Reviews/Hearings
Consumer costs	Human health impacts	Water pollution	Government wide anti-graft initiatives
Mobility barriers	Community cohesion	Hydrologic impacts	Project Specific Fiduciary Measures
Accident damages	Community liveability	Habitat and ecological degradation	Transport Governance & Accountability Action Plans
DNRR (Depletion of Non-renewable resources)	aesthetics	DNRR	Transport Governance Integrity Systems

Source: World Bank, 2008; Litman, 2008; Chakwizira & Mashiri, 2008

Because transport governance sustainability is concerned with impacts that occur in distant locations and times, assessment generally requires life cycle analysis, which considers all impacts over the entire life of a product or activity including resources used (and therefore pollution produced) during production and disposal, also called embodied resources and pollution (Chester, 2008).

Table 5, presents some transportation governance issues in South Africa with specific reference to transport infrastructure furniture provision, management

and maintenance. A similar transport governance orientated audit and analysis would require to be subjected to all facets of transport modes if an enhanced transport governance environment is to prevail.

Table 5: Approach in addressing some transport governance issues

	Indicator	Strength	Weakness	Opportunity
Road infrastructure furniture, management and sustainability	Toll Gate Bill Boards	Inform and communicate toll fees payable per vehicle category to road users	Does not communicate and inform road users of the actual breakdown of how toll fees collected are used	Can be legislated for and is easy to implement
	Fixed Road Speed Trap Cameras	Real-time traffic speeding reporting system	Majority of these cameras still take still photos of offending motorists from the front instead of from behind	Enforcement and compliance to new requirement
	Weighbridges	Address overloading	Time delays Corruption allegations	Improve vehicle management systems Civil society route integrity audits
	Road Blocks	Manage traffic and movement	Fewer road blocks Corruption allegations	Increase driver safety alert sections Increase fixed road blocks to 1:15km for example Civil society route integrity audits

4 CONCLUDING REMARKS AND RECOMMENDATIONS

4.1 Conclusion

SADOT is cognisant of the countries' transport governance issues. These have to do with addressing the transport and communication infrastructure networks and services in a holistic and inclusive manner with new construction being balanced with regular maintenance. The transport governance challenge lies in balancing firstly, infrastructure investment, growth, development and service delivery. Secondly, concomitant emerging transport governance themes such as climate change, energy crisis, information society and the millennium development goals need thorough consideration. Thirdly, the scope and space for encouraging and promoting civil society collaboration and partnerships in transport infrastructure and services provision should be exhaustively explored. Providing genuine action space for civil society as a development partner is therefore of cardinal importance. Fourthly, the prevailing transport governance organisational culture, especially relating to transport planning, needs to accommodate more inclusive approaches. Such thinking recognises that civil society and communities are an invaluable transport planning, provision and management resource that has hitherto been under-utilised. The need to embrace such transport governance development approaches was aptly summarised by one respondent thus:

"…The South African transport governance system of `gate-keeping' may not necessarily always deliver intended transport governance goods and services. The power of embedded transport governance organisational cultures to act as barriers to transport change should not be under-estimated. Therefore, to develop an effective transport planning framework which embraces bottom-up participative strategies will require a sea of changes in the traditional attitudes of transport experts and the organisational culture of the profession…" (Extract of an interview with a transport specialist, Pretoria, 21 November, 2008).

Lastly, the study findings strongly recommend the implementation of robust and creative car use and ownership policies and strategies that will lead to the attainment of sustainable transport governance systems, processes, programs and plans.

4.2 Recommendations

While South Africa has made improving governance and public accountability a central theme, this paper argues that more can still be done. In order to cultivate and nurture better transport governance, it may be necessary that South Africa adopts and modify the World Bank's transport governance systems already in place elsewhere. Many transport projects can be implemented in such a manner that transport governance and accountability action plans are included as part of project approval requirements. Even the bill boards could be regulated to require that governance and accountability requirements are effected and catered for at the outset. This would lead to increased scrutiny of transport projects, and in the process ensuring a high level of integrity in project implementation. Ultimately this would feed into continued transport research and analysis (such as transport analysis of unit costs) into best practice for transport governance.

In the short term, a strong transport governance knowledge and technology transformational research agenda may need to be crafted revolving around the following under listed aspects (Chakwizira, 2008):

- A public taxi industry worker compensation strategy and policy – including working hours, salary, health, and education and retirement benefits.
- A life cycle transport governance study perspective on minibus and taxi operations to inform improvement interventions in the industry buttressed by other measures regulating vehicle use in the country.

Car ownership in South Africa has increased dramatically since the dawn of the new democracy (Chakwizira et al, 2008). In seeking to entrench good governance, research studies and pilots can be generated informed by these realities focusing on exploring the feasibility of implementing the following car use, control, restraints and incentive mechanisms:

- Vehicle ownership caps and quotas.
- Vehicle anti-smoking legislation.
- Vehicle scrapping and car retirement incentives and policies et cetera.

This paper further posits that the transport governance research agenda in South Africa needs an alternative anchoring perspective and branding. Therefore intensified transport governance research work and development seeking to better understand the wider impacts of transport on the economy and society is important.

REFERENCES

African National Congress (1994) "***Reconstruction and Development Programme: A Policy Framework",*** ANC, Albert Luthuli House, Johannesburg

Borgetic, Z. & Fedderke, J. (2006) "***International Benchmarking of South Africa's Infrastructure Performance"***, Journal of Development Perspectives

Cervero (2003) "**Road Expansion, urban growth and induced growth"**, Journal of the American Planning Association

Chakwizira, J. (2007) "***The Question of Traffic Congestion and Decongestion in the Greater Johannesburg Region"***, SATC, Pretoria ISBN 1-920-0702-X

Chakwizira, J. Mokonyama, M. Mashiri, M. & Marrian, B. (2008) "***Sustainable Public Transport in South Africa"***, SACN, Braamfontein, Johannesburg

Chakwizira, J. (2008) "***Technology & Knowledge Transfer for Development"***, Knowledge to Remobilise Africa, edited Proceedings of the Second Biennial Knowledge Management Africa Conference held in Nairobi, Kenya, July 2007, ISBN 978 -1- 920227 -02-9

Chakwizira, J. & Mashiri, M. (2008) "***Some insights into the intersection of physical planning and governance in Zimbabwe"***, Planning Africa 2008: Shaping the Future, ISBN 978-0-620-40287-3 pp: 178 -201

Chester (2008) "***Life cycle environmental inventory of passenger transportation in the United States"***, Institute of Transportation Studies, Dissertation

DBSA (2005) "***Sector Review: Water Delivery in South Africa – Challenges for Water Services Institutions"***. Monitoring and Evaluation Discussion Paper. Development Bank of Southern Africa.

DBSA (1998) "***Infrastructure: A foundation for development"***. Midrand, Pretoria

DBSA (2008) ***Infrastructure Baromètre***, Midrand, Pretoria.

Department of Transport (2008) ***"www.dot.org"***

Department of Transport (2003) "***National Household Travel Survey"***, Pretoria

Edwards, L. & Alvin P. (2006) **"*South Africa's Export Performance: Determinants of Export supply".*** South African Journal of Economics. Vol. 74, No. 3. (September)

Estache, A. & Goicoechea A. (2004) **"*A Research database on Infrastructure Economic Performance"***, Policy Research Working Paper No. 2545, World Bank, Washington, DC

Fedderke, J. W., Perkins P & Luiz J. M. (2006) "***Infrastructural Investment in Long-run Economic Growth: South Africa 1875-2001"***. World Development, 2006, Vol. 34, Issue 6, p 1037-1059.

gTKP (2008) "***www.gtkp.org"***

Litman, T. (2008) "***Sustainable Transportation Indicators: A Recommended Research Program for Developing Sustainable Transportation Indicators & Data"***, Transportation Research Board

Helliwell, J. F. (2003) "***Maintaining Social Ties: Social Capital in a Global Information Age"***

Kane, L. (2002) "***The Urban Transport Problem in South Africa and the Developing World: A Focus on Institutional Issues"***, Urban Transport Research Group, University of Cape Town

Kennedy, C. et al. (2005): **"*The Four Pillars of Sustainable Urban Transportation",*** Transport Reviews, Vol. 25, No. 4, 393-414.

Keefer, P. & Knack, S. (1995) ***"Institutions and economic performance"*** Economics and Politics

Kularatne, C. (2006) "***Social and Economic Infrastructure Impacts on Economic Growth in South Africa, School of economics"***, University of Cape Town

Mashiri, M. Maponya, G. Nkuna, Z. Dube, S. & Chakwizira, J. (2007) "***Unpacking the Relationship between healthcare, mobility and access"***. CSIR PG Report, Pretoria

Mashiri, M. Madzikigwa B. Chakwizira, J. Nyoni, P & Makgalemane, M (2008) ***"Integrated Rural Mobility and Access: Mainstreaming Environmental Issues in Community Transport Project Planning and Construction",*** SATC, 2008, Pretoria South Africa

Mashiri, M. Chakwizira, J. & Nhemachena,C. (2008) ***"Rejecting the inevitability of Poverty" Empowering women for sustainable rural livelihoods through community-based employment intensive rural infrastructure maintenance projects".*** 2nd Biennial CSIR Conference, 17-19 November, 2008, Pretoria ISBN 9780798855730

Mbara, T. C. (2006) "***Coping with Demand for Urban Passenger Transport in Zimbabwe: Challenges & Options"***, SATC, Pretoria

Mitra, A. Varoudakis, A. Veganzones-Varoudakis, M. A. (2002) **"*Productivity and Technical Efficiency in Indian States' Manufacturing: The Role of Infrastructure"*** - Economic Development and Cultural Change - Chicago Press

Mokonyama, M. & Kirsten (2007) "***Road (Surface) Transport Research in South Africa: Opportunities and Challenges for Europe and South African Relationship"***, Transport Research Arena, ljubljana, Slovenia, 21-24 April, 2008

Nelson, J. D. Leitham, S. & McQuaid, R. (1994), "***Transport and commercial location decisions: some recent evidence, Transport Planning Systems 2"***, pp. 41-47

Perkins, P. (2003) ***"An analysis of economic infrastructure investment in South Africa"***, Dissertation, University of the Witwatersrand, Johannesburg
Preston (1998) **"*Public Transport Elasticities: time for a rethink?"*** UTSG 30th Annual Conference, Dublin

Republic of South Africa (1996) ***"Growth, Employment and Redistribution - A Macro- Economic Strategy",*** *Pretoria.*

Republic of South Africa, Department of Provincial Affairs and Constitutional Development (1998) "***White Paper on Local Government"****.*

South African Government (1996) "***The Constitution of the Republic of South Africa"***, Act 108 of 1996

Statistics South Africa (2007)

Statistical Release P7000 (2006), **"*Transport, Post and Telecommunication Industry"***

United Nations (1999) **"*Human Development Report"***

UNDP (2000) **"*Human Development Report: Poverty"***

UNDP (2003) **"*Human Development Report: Millennium Development" Goals***

World Bank (2008) **"*World Development Report"***