

# TRANSPORTATION TRENDS AND FUNDING IN SOUTH AFRICA

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## ABSTRACT

The funding of transportation, including both the road network and public transport, has become more of an issue than ever before. There is concern about the traditional method of road use taxation, namely the fuel levy, due to improved fuel consumption of vehicles and the potential phasing in of electric vehicles. Electronic tolling in Gauteng has been strongly opposed by motorists. The purpose of this paper is to present the latest available and relevant transportation trends, as well as to provide a perspective of the latest thinking wrt transportation funding, in an effort to contribute to the debate and possibly assist in getting some convergence in moving forward.

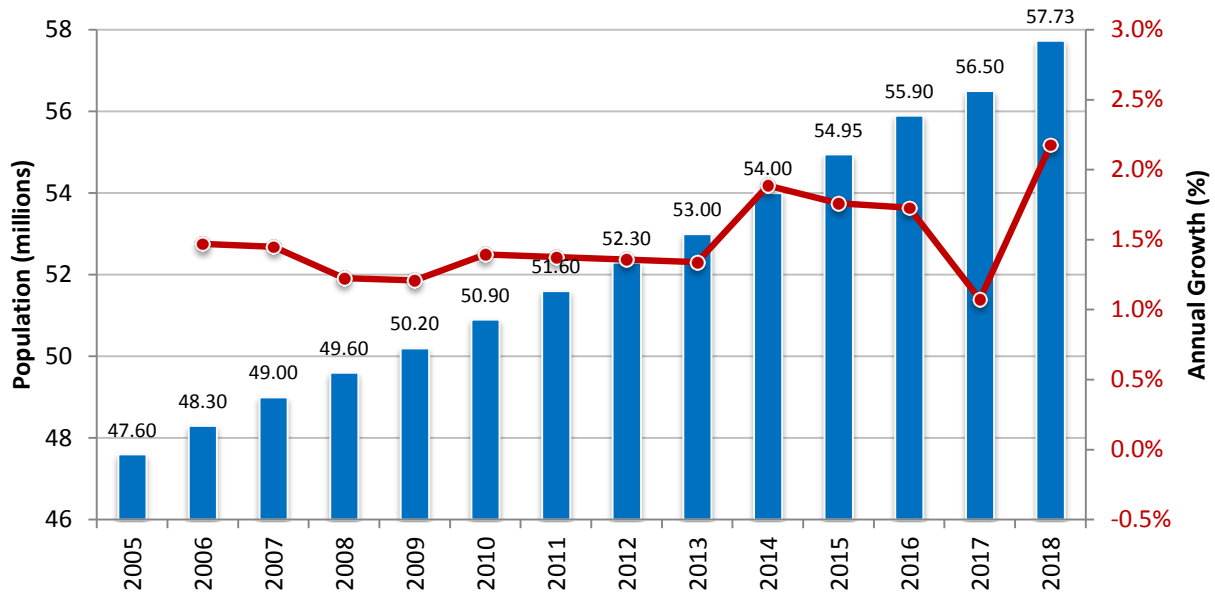
It is concluded that motorisation is growing rapidly, with the concurrent pressure on road travel. Whilst experts are suggesting new methods of road use taxation, through inter alia a distance based charge, it is clear that such a technique will be costly to administrate and likely to be resisted by many motorists. Research in this respect is clearly warranted.

## 1. INTRODUCTION

In 2016 a paper was produced which illustrated transportation trends (including modal split, road safety and funding) in South Africa (Stander & Brink) - it was an effort to contribute to further understanding of the status quo and to highlight where matters might be heading. Since then, a substantial debate on transport funding has been taking place. The Financial and Fiscal Commission financed a study (Financial and Fiscal Commission, 2018/19) to investigate an appropriate funding model for public transport. At a recent debate on transport funding, organised by the Transport Forum (Transport Forum SIG), local experts in the field put forward a number of viewpoints. It is clear that the subject is complex, the angles of approach vary and opinions differ. Most speakers advocated new and more taxation of road users – notably the introduction of a new distance based road user charge. The objectives of this paper are (i) to provide the latest available relevant transportation trends and (ii) to provide further perspective on the funding of public transport in South Africa. The main aim is to contribute to the current debate on transportation funding and thereby assisting in getting some convergence in moving forward.

### 1.1 Population

The South African population growth for the period 2005 to 2018 is depicted in Figure 1. The official (Department of Statistics) population number for 2018 is 57.73 million, representing a 2.2% growth during 2017, and an average growth of 1.5% per annum over the past decade (since 2008). The trend during the past decade is clear but when and if a flattening off will occur, is difficult to say – should the trend of the past decade continue, then the total population will reach 69 million by 2030.



**Figure 1: South African Population (Department of Statistics)**

## 1.2 Economy

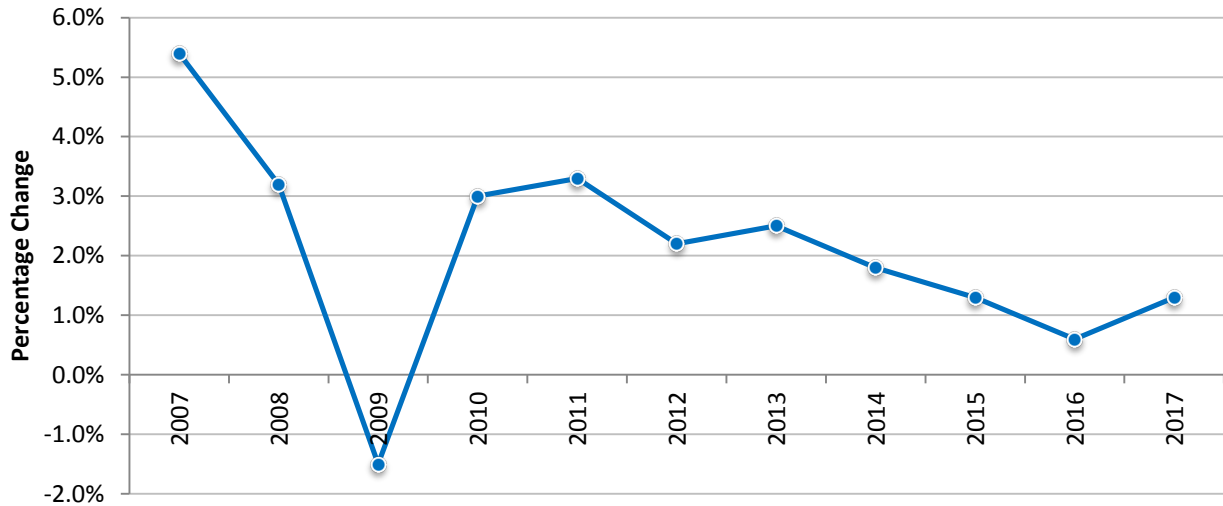
Out of approximately 190 recognised countries, South Africa had the 34<sup>th</sup> largest economy in the world in 2018, according to the IMF (International Monetary Fund, 2019). See Table 1 below. On a per capita basis South Africa is rated at 91<sup>st</sup> in the world meaning that the average personal income is on a substantially lower level (when compared with the rest of the world). Expectations for the level of transportation infrastructure should take this into account.

**Table 1: South African economy versus other countries 2018 (International Monetary Fund)**

RANK	TOTAL GDP (BILLION US \$)		RANK	AVERAGE GDP/CAPITA (US \$)	
	COUNTRY	US\$		COUNTRY	US\$/CAPITA
1	United States	20 494	1	Luxembourg	114 234
2	China	13 407	2	Switzerland	82 950
3	Japan	4 972	3	Macao SAR	82 387
4	Germany	4 000	4	Norway	81 694
5	United Kingdom	2 829	5	Ireland	76 098
30	United Arab Emirates	425	87	Peru	7 002
31	Nigeria	397	88	Dominica	6 977
32	Ireland	373	89	Libya	6 692
33	Israel	370	90	Colombia	6 684
34	South Africa	368	91	South Africa	6 377
35	Hong Kong SAR	363	92	Ecuador	6 315
36	Singapore	361	93	Belarus	6 306
37	Malaysia	354	94	North Macedonia	6 100
38	Denmark	351	95	Iraq	5929

The South African annual GDP year-on-year growth has been declining since 2011 from 3.3% to 0.6% in 2016 (refer to Figure 2). 2017 has seen a recovery to 1.3% growth, but

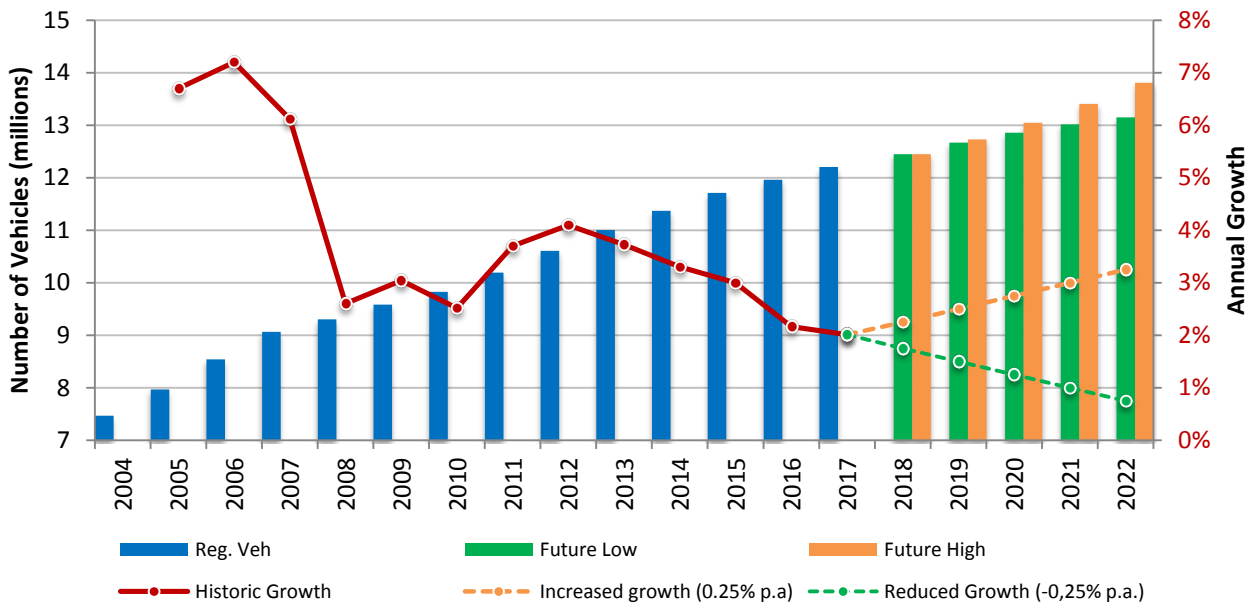
2018 has gone down to 1.1% (Dept Statistics – year-on-year 3<sup>rd</sup> quarter 2018). So, economic growth in recent years is lower than the population growth – on average everyone is getting poorer. The appropriate spending on and funding of the transportation network is getting even more difficult and the importance of improving the economic growth rate is clear.



**Figure 2: South African GDP growth (Department of Statistics)**

### 1.3 Vehicles

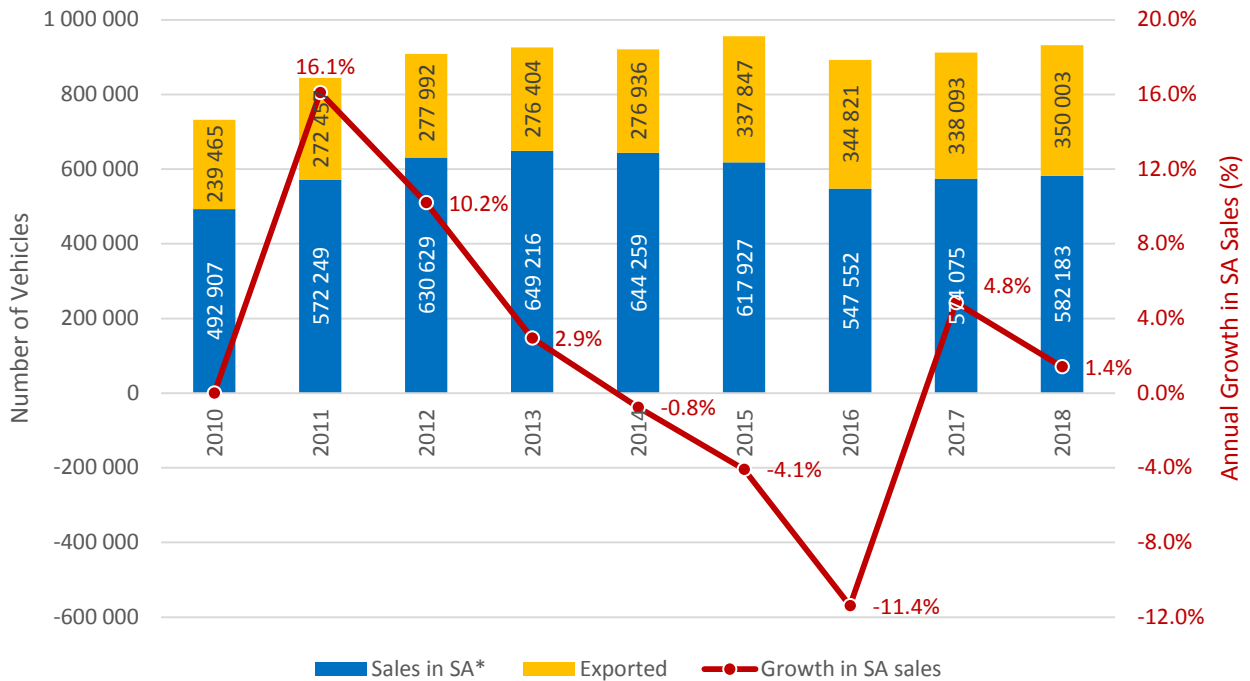
The growth in registered vehicles for South Africa between 2004 and 2017 is shown in Figure 3. The growth in registered vehicles has steadily decreased since 2012 with a growth of around 2% per annum in 2017, compared to the 3.0% per annum (on average) over the decade since 2007 (12.2 million registered vehicles in 2017). The growth in registered vehicles is still higher than the population growth but follows the trends in the economy closer.



**Figure 3: Growth in registered vehicles (Road Traffic Management Corporation)**

Based on the population number for 2017, the vehicle ownership in SA equalled 211 vehicles/1 000 of the population. This can be compared to developed countries which have corresponding numbers of 500 to 800 vehicles/1 000 population (former number for Australia and latter number approximately represents the USA) (Stander & Brink). projection of declining (-0.25% p.a.) and increasing (+0.25% p.a.) vehicle growth rates Figure 3 shows an expected 13.1 and 13.8 million vehicles by 2022, a growth of almost one million vehicles over 5 years.

New vehicle sales according to NAAMSA are presented in Figure 4.



\*Note these numbers include domestic production, as well as imported vehicles.

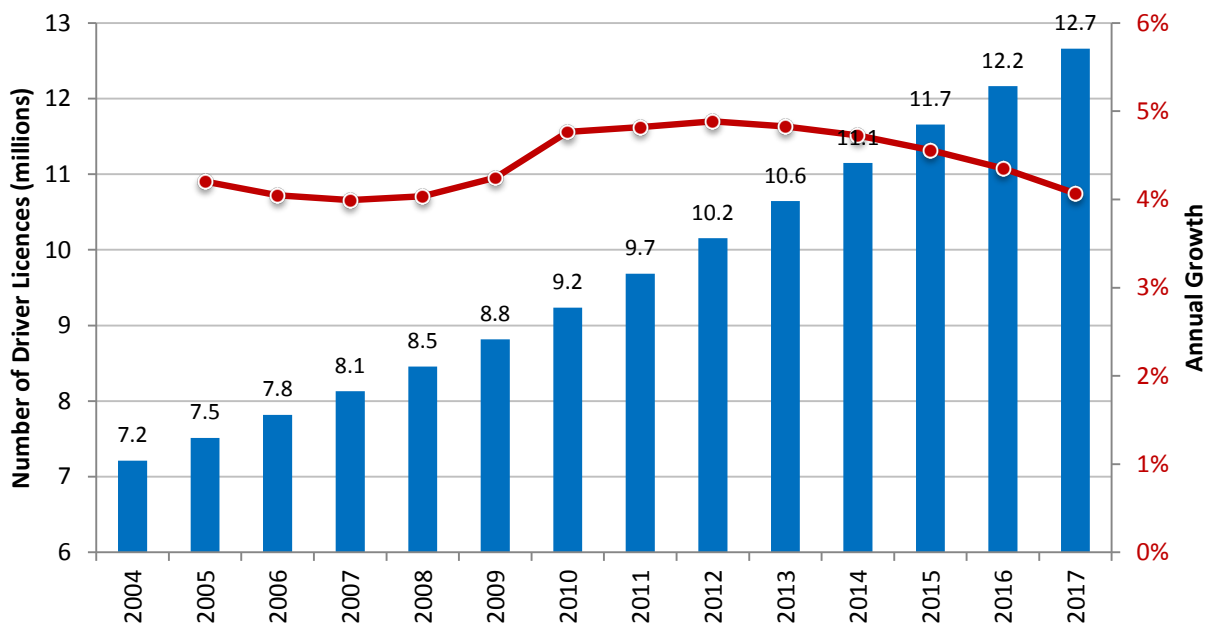
**Figure 4: New vehicle sales in South Africa (NAAMSA, 2018)**

New vehicle sales in SA show a decline since 2013 (e.g. 2016 shows an 11% decline when compared with 2015). Subsequently, 2017 and 2018 statistics show a recovery in South African car sales to return to positive growth figures. According to NAAMSA the official motor industry vision is to produce around 1 million new vehicles in SA by 2020.

#### 1.4 Driver licences

Figure 5 below summarises the numbers of persons with driver licences between 2004 and 2017. The growth in the number of driver licences issued remains above 4% since 2005 although a slight decrease in year-on-year growth can be noticed since 2012.

It follows from the figure that there is a relatively high growth in the total number of persons with driver licences. Between 2004 and 2017, the average increase in the number of persons with driver licences has been 4.4% per annum, which is higher than the growth in registered vehicles. This confirms the relative high growth in motorisation which is taking place (with the resultant impact on road needs and capacity). The total number of persons with driver licences approximately equals the number of registered vehicles.

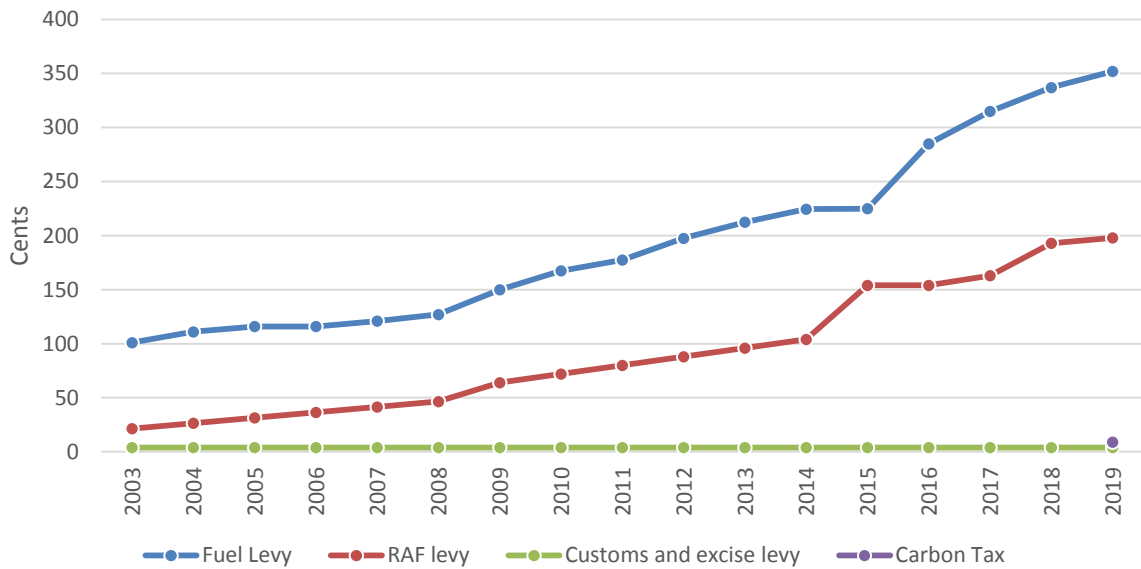


**Figure 5: Driver licences issued (Road Traffic Management Corporation, 2017)**

### 1.5 Revenue from road users

Road users (mostly private cars, but also the component of buses and minibus taxis) have through the years contributed substantially to government revenue through the payment of tolls, licence fees, fuel levies, carbon taxes, import duties, fines and other taxes. The revenue from the fuel levy alone currently forms about 5% of total tax revenue. According to Krygsman (2018), the total direct and indirect revenue from road users was about R166 billion in 2014 or about 15% of total tax revenue. The revenue from the general fuel levy (RAF excluded) has grown from R41 billion in 2013/14 to R69 billion in 2017/18 and a projected revenue of R77.5 billion for 2018/19. This represents a growth (in nominal terms) of almost 14% per annum or in real terms of almost 9% per annum. Over the last decade (2009 to 2019), the tax component of the fuel price has increased over 250%, with the RAF levy growing 315% or on average at 15% annually as illustrated in Figure 6 below. Currently, the fuel levies make up 70% of all road user generated income for the state (<https://businesstech.co.za>).

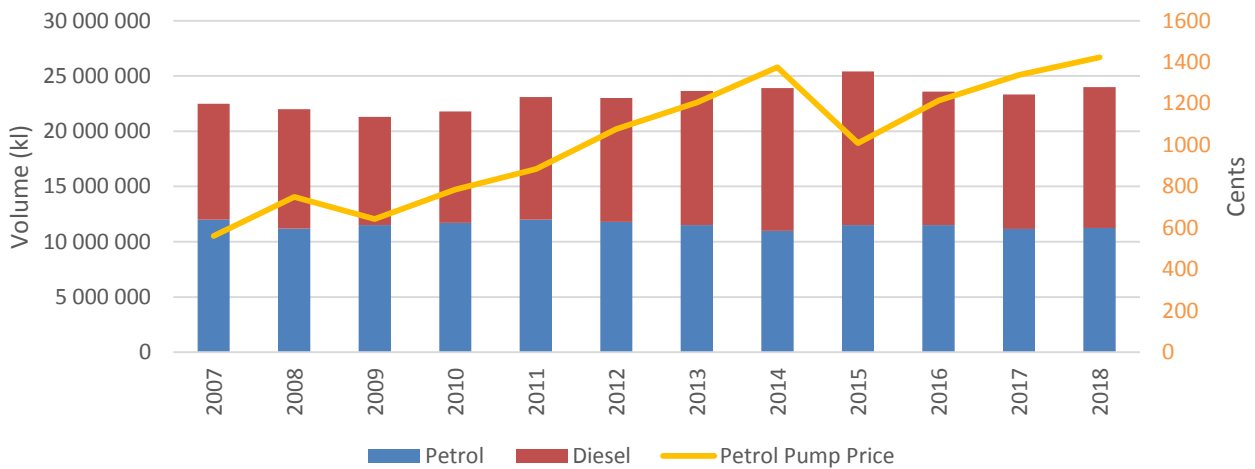
So, although the “productivity” of the fuel levy is reducing (cars getting more fuel efficient), the Minister of Finance has compensated quite remarkably in fuel tax revenue for that. The expected growth in use of electric vehicles will eventually impact negatively on income from the current fuel levy. A distance-based road charging system has been proposed (Krygsman, 2018), but in view of the recent experience with e-tolling, the introduction of such a new road tax could be problematic. In addition, the administration and collection of the monies will be costly.



**Figure 6: South African fuel taxes per litre of fuel (2003-2018), (BusinessTech, May, 2019)**

### 1.6 Fuel consumption

Petrol consumption (Department of Energy, 2019) declined slightly from 12 billion litres in 2007 to 11.2 billion litres in 2018 or -0.6% p.a. Refer to Figure 7 (note that the 2018 total has been estimated by assuming the 4<sup>th</sup> quarter equal to the 3<sup>rd</sup> quarter consumption). Diesel consumption grew at an average of 1.8% per annum. Approximately 70% of petrol and diesel is consumed by the transport sector. Increased vehicle fuel efficiencies over the years is evident in the decrease in market share of petrol-fuelled vehicle sales from 73% in 2007 to 63% in 2016 while diesel-fuelled vehicle sales increased by 10 percent over the same period. However, the combined effect of vehicle growth and higher efficiency, still resulted in a relatively constant fuel consumption of between 23 and 25 billion litres per annum. The impact of electricity generation through diesel generators is not known, but is presumably included in the information provided by the DOE. It is considered that the total fuel consumption will remain at current levels for at least the next five years.



**Figure 7: Petrol and diesel consumption in South Africa (Department of Energy)**

## 2. FINANCIAL ASPECTS OF PUBLIC TRANSPORT

### 2.1 Public transport and other social services

South Africa is considered (World Bank) as the most unequal country in the world<sup>5</sup> when it comes to personal income. The Gini coefficient was given as 0.63 for 2015, the highest for any country (0 being an equal society and 1 being a perfectly unequal society). This situation worsened since 1994, but could have been worse did the government not intervene by various measures such as social grants (to 17 million people, or 30% of the population), and subsidisation of education, health, housing and transport.

The question that arises is what is the extent of transport subsidisation in the bigger picture of social services. Table 2 was extracted from the 2018 Budget Review (National Treasury, 2018) – from a total budget of R1.67 trillion, R1.01 trillion (or 60%) is for social services.

**Table 2: South African social services budget (National Treasury)**

SOCIAL SERVICE	R BILLION	%
<b>Social Development</b> Old age, social security, child support, disability and other grants	259.4	26
<b>Education</b> Basic education, university transfers, student aid, skills development and other grants	351.1	35
<b>Health</b> District, central, provincial and other health services	205.4	20
<b>Community Development (housing, services)</b> Municipal equitable share, water/electricity and other infrastructure	157.7	16
<b>Public Transport</b> Transfers to national, provincial and local government, and to PRASA	38.6	4
<b>Total</b>	<b>1 012.2</b>	<b>100</b>

The South African GDP for 2018/19 is estimated as R5 trillion in the 2018 Budget Review. The extent of the social spending is evident (20% of GDP). The portion of social spending allocated to public transport is relatively small, when compared to the other social services – less than 4% of the total social spending.

Where does the R38.6 billion for public transport go? Table 3 shows the “intergovernmental transfers for public transport” as provided by the Financial and Fiscal Commission (2018/19). The table could have errors - e.g. (i) no reference to Public Transport Network Grants – City of Cape Town showed almost R1 billion received in 2016/17, (ii) table shows nothing for Gautrain – recently announced that Gautrain was subsidised to approximately R1.6 billion in 2017/18 and (iii) a few billion Rand should be shown for South African Airways, as it is also a form of public transport:

**Table 3: Intergovernmental transfers for public transport (FFC, 2017)**

Public Transport Transfer	R billion	%
SANRAL (very little spending on public transport)*	6.77	14%
PRASA	18.89	40%
Provincial Public Transport Operating Grants (PTOG)	5.4	11%
Provincial Road Maintenance Grants (mostly for private transport)*	9.53	20%
Local Government PTOG	5.59	12%
Rural Road Network Grant (mostly for private transport)*	0.1	0%
Taxi Recapitalisation	0.35	1%
Other Transfers	0.35	1%
<b>TOTAL (AMOUNTS SHOWN WITH * EXCLUDED)</b>	<b>30.58</b>	<b>100%</b>

The majority of funds (according to this information) went to PRASA (60%) and the rest basically to provincial and local government operating grants. Even though public transport forms such a small portion of the social spending, the FFC towards the end of 2016 identified the need for an appropriate funding model for public transport (Financial and Fiscal Commission, 2016), specifically to find a funding framework for urban municipalities. In their Division of Revenue (DOR) Submission for 2018/19 (Financial and Fiscal Commission), which contains the results of this investigation, it is concluded that:

- A funding gap exists between what is required for urban municipalities to manage public transport networks, versus the funding that is available. **Additional taxation** could provide income for public transport.
- The historical settlement pattern in urban municipalities and current development patterns, resulting in urban expansion, need reversal to address cost challenges.
- The current model of implementing the Public Transport Strategy is unaffordable. Public transport costs should be reduced and implementation approached incrementally to close the remainder of the funding gap.

## 2.2 What does public transport cost?

The enhancement of public transport has been a high priority for years – as an example, the provincial department of transport in the Western Cape changed their credo in 1994 to “Public Transport First”. The question of what the correct balance between spending on private and public transport is, appears to be seldomly asked. What should it be? Should some of the considerations possibly be the following:

- what can be afforded?
- what is best for the enhancement of the economy?
- what is best for creation of employment opportunities?
- what is best for eradication of poverty?

This remains easier said than done, as is illustrated below.

**Private transport** – It has been shown many times that travelling on the country’s road network is good business for government and road users (private cars/trucks plus component of public transport) are tax milking cows par excellence. The fuel levy (Road Accident Fund excluded) alone is the fourth largest source of revenue, constituting around 5% of revenue (Section 1.5 above) and when all taxes from road users are considered, then it exceeds the amounts being spent on roads (Krygsman, 2018). The fuel levy has



been declared a general tax (albeit a proxy for the user pay principle) and has no relevance to actual spending on roads. Why some (Krygsman, 2018; Schussler, 2019) bring in the notion that road users should be expected to pay for public transport, is not clear – e.g. private hospital users are not expected to finance public hospitals? In addition the motor manufacturing business is a very important component of the SA economy, constituting 30% of manufacturing output (Lamprecht, 2019) and around 7% of the GDP (Wits University study, 2018) - Volkswagen is the largest employer in the Port Elizabeth region.

**City of Cape Town** – At a meeting of the Transport Forum in Bellville in March 2018, Fortune and Moore (2018) of the City of Cape Town presented the investment logic and business plan of public transport in the city. In spite of all previous efforts, it was confirmed that congestion towards the CBD was worsening. Much emphasis was placed on transforming corridor and nodal development to achieve spatial transformation and to support transport and land use integration. Progress on this front appears slow and difficult. A projection of BRT costs and revenues for 2032 was provided, with positive assumptions about land use transformation and reductions (15%) in bus operational cost. It showed:

**Table 4: BRT (MyCiTi) predicted costs and revenues for 2032 (Fortune and Moore 2018)**

ITEM	COSTS (R mil)	REVENUES (R mil)
Direct operating and fleet costs	3 390	
Indirect costs	1 720	
Predicted fare revenue		2 420
PTNG + PTOG (central gov grants)		1 306
6% Portion of City Property Taxes		623
Parking and other revenue		772
<b>TOTAL</b>	<b>5 110</b>	<b>5 121</b>

An expected 47% recovery of costs by fare revenue is shown, which is higher than the 40% reported in 2015 for Cape Town (Bulman and Van Ryneveld, 2015). Further, central government grants are expected to remain an important contributor to BRT operational cost (around 25%). From the numbers it can be concluded that whereas 0% of property taxes (in Cape Town) was required before 2010 as public transport subsidy, 4% a few years ago, it had to be increased to 6% to assist in subsidising BRT operational costs. It is not known whether other cities in South Africa allocate a portion of their property taxes to public transport.

**Gautrain** – To the dismay of many (including Cosatu), the Gautrain Management Agency’s Annual Report for 2017/18 (Krygsman, 2018) indicated that the operating subsidy for 2017/18 was approximately R1.6 billion. The fares on Gautrain vary from R27 to R183, so on average could be around R100/passenger trip. Seeing that there are about 15 million passenger trips per annum, it implies that the passengers are currently subsidised (on average) with about the same amount that they pay, i.e. around R100/trip. It appears as if this subsidy is not the shortfall between fare revenue and operating cost, but rather the result of projections in the operations contract not materialising. In the end, the result is still that the tax payer has to pay around R100 for every passenger trip undertaken on Gautrain.

## 2.3 Example Cape Town

A study done for the City of Cape Town (2018) illustrates the implications of improved public transport further. Development in the so-called Tyger Valley Area (TVA) in the northern part of the city has grown from about 300 000 m<sup>2</sup> of GLA twenty years ago, to approximately double that size in 2018. The question was what further growth can be expected and how will it be serviced from a transport viewpoint as congestion does exist at places. Current thinking is that the ultimate development of the area (say in 40 years) can amount to 1.5 million m<sup>2</sup> of GLA, i.e. 2.5 times what it was in 2018.

It is known that the city's planning includes the BRT roll out to eventually include this area (in 10 to 15 years from now), and three trunk routes with their feeders are in planning for this vicinity. A number (13) of road projects are also included in current planning, and are considered necessary to assist in the future servicing of the area.

By including all of these projects, the city's accepted EMME/4 demand modelling tool have been applied and it could be shown that the estimated growth in the area can be accommodated by the proposed transport system in 40 years' time at approximately the same levels of service as at present. The model includes a mode choice model which predicted that the envisaged public transport improvements would result in a 10% modal shift from private travel to public (mostly road based) transport. First cost estimates for both the future road and public transport upgrading have been made, and it has been spread over a 40 year period. The total capital and operational cost relating to the transport upgrading is (attributable to this area, current subsidy levels, road based public transport only, i.e. rail excluded) summarised in Table 5.

**Table 5: Tyger Valley future road and public transport upgrading cost estimate  
(City of Cape Town, 2018)**

ITEM	2018 (R mil)	Discounted @ 8% (R mil)
Roads – allocated to private transport	590	254
Road based public transport (only BRT)	8 970	1 270
Rail (excluded – provisional sum for Bellville station)	100	80

The point is that the estimated future subsidy costs related to the planned BRT will be high and could add substantial demands on the tax base of the city. This consequence of increased public transport provision should be acknowledged and planned for. The portion of the road cost which can be attributed to the TVA was estimated to be close to the amount of Development Bulk Contributions which can be raised from the anticipated development.

## **3. CONCLUSIONS**

### **Transport Trends**

- i) As was found in 2016, the growth in the issuing of drivers licences is still exceeding population and vehicle registration growth, indicating ever increasing motorisation of the SA population. Vehicle ownership is still close to 210 vehicles/1000 of the population. Fossil fuel consumption has remained basically constant over the past ten years. Taxation of road users (at least through the fuel levy) has grown both in nominal and real terms at very high rates.

## Public Transport Finances

- ii) In relation to spending on other social services in SA, the subsidisation of public transport is relatively small. Should the Gautrain and SAA be added, then the total amount for 2018/19 is probably R40 billion (or 4%), out of a total of R1.01 trillion. In terms of the situation with other social services, the notion by some that road users should be responsible for public transport subsidies appears strange.
- iii) The need for a feasible funding model for public transport has been identified. The conclusion reached after an investigation by the Financial and Fiscal Commission is that the current model is unaffordable and public transport costs have to be reduced. The need for a reversal in settlement and development patterns has been expressed, but the how is still unclear.
- iv) Various examples indicate that fare collection on public transport equals at most 50% of operating cost. Current public transport funding models imply relatively high demands on the local authority tax base – such as the example provided for Cape Town indicates, where 6% of property tax has to be allocated to subsidise bus rapid transit operating cost.
- v) Roads and the use thereof cause enormous positive externalities (substantial support of a R5 trillion economy), but also cause negative externalities (air pollution to all, congestion to users, crashes and resulting injuries and deaths to users and pedestrians, etc). On the other hand, road users are revenue contributors and good business for government. Public transport can negate some of the mentioned negative externalities (of road use), but it comes at a cost, which is getting prohibitive.
- vi) Various experts are suggesting the introduction of a new distance-based road tax. The collection of such a tax is likely to be expensive and will be resisted by road users. Research into this subject is clearly required.
- vii) **Final word:** Is South Africa at the correct balance with respect to spending on private and public transport? The status quo can be considered the correct balance, as it is what is possible under the circumstances. Under the current situation of enormous pressure on the fiscus to service existing loans (borrowing at 55% of GDP), the consequences of higher investment in public transport should be recognised and taken into account by all.

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