Road funding policy and options

Alex van Niekerk Pr Eng
Planning, Toll and Traffic Manager
SANRAL
niekerka@nra.co.za

INTRODUCTION

Successful project implementation depends on several key factors. However, without sufficient funding, no project implementation will be possible. When transport systems are deficient in terms of quality, capacity or reliability, they have an economic cost such as reduced or missed opportunities.

Hardly any significant new road construction projects have been launched in South Africa since 1986, except for those that were constructed as part of toll projects. South Africa has been spending considerably less than half of the international benchmark for road construction and maintenance over the past decades. Between 1980 and 2004, the public sector share in gross domestic fixed capital formation in the South African economy declined dramatically, and as a result the maintenance backlog (2014) for national and provincial roads is estimated to be R197 billion.

The transport sector and the mobility it confers are linked to the level of economic output, employment and income within any national economy. It impacts directly on the development and the welfare of the population. Poor infrastructure is an obstacle to economic growth. South Africa faces, *inter alia*, different challenges with respect to road infrastructure, namely:

- to maintain what it has (the national asset)
- to provide for the non-serviced and under-serviced communities, and
- to provide infrastructure expansions to improve accessibility and mobility.

Road infrastructure helps solve both short-term and long-term economic problems. In the short term, investment in road infrastructure helps provide jobs for low-skilled workers. In the long term it has a wide range of benefits, e.g. multiplier effects – it creates direct, indirect and induced jobs; reduces congestion and carbon emission; and benefits business by reducing the cost of transport.

Funding policy for road infrastructure cannot be reduced to finding a solution to a single project. When considering the funding model to be applied, the holistic transport funding policy and requirements of all road infrastructure in the country must be considered. There is no one-size-fits-all solution. Different types

South Africa has been spending considerably less than half of the international benchmark for road construction and maintenance over the past decades. Between 1980 and 2004, the public sector share in gross domestic fixed capital formation in the South African economy declined dramatically, and as a result the maintenance backlog (2014) for national and provincial roads is estimated to be R197 billion.

of infrastructure serving different objectives will have different funding solutions. In seeking a funding solution, one should consider, amongst other factors, how fair the solution is within the wider road infrastructure policy considerations for South Africa. Although different funding models are available, all infrastructure is ultimately paid for directly or indirectly by citizens of the country, except if donor funding is received from abroad.

SOUTH AFRICA'S TRANSPORT/ROAD FUNDING POLICY

Transport funding policy is embedded in various policy and legislative documents, including the following:

- White Paper on National Transport, 1996
- Moving South Africa, 1998
- The National Land Transport Act of 2009 (also governing how to procure transport infrastructure)
- National Development Plan, 2012.

The bulk of funding for road transport infrastructure is still provided through the fiscus. However, the funding policies mentioned support the principle of direct user charges to recover capital and operations/maintenance costs directly from those who benefit from the use of that infrastructure. Furthermore, the funding policy does not only focus on cost recovery, but also on achieving other objectives. These are:

- Changing travel behaviour – distance/time
- Promoting the use of public transport
- Environmental – using cleaner/cost effective fuels
- Urban development – reducing urban sprawl, promoting densification.

In essence, funding policy determines the timing for providing infrastructure. If only dependent on the fiscus, and within a constrained budget, infrastructure maintenance and improvements and the associated benefits may be delayed. In this regard, other options, which comprise the raising of debt from capital markets via government borrowing or the issuing of bonds or private sector borrowing, can be considered. In order to repay debt, an income for those who benefit from the new or improved infrastructure is generated by means of the user-pays principle. Tolling is a direct application of the user-pays principle and is also the most equitable. The fuel levy is an indirect user-pays approach and is less equitable.

As a result of many competing needs, especially for social infrastructure and services, funds for the maintenance and upgrading of roads from the fiscus are insufficient. The different funding methods are therefore a way of prioritising and expediting the delivery of road infrastructure, and the user-pays approach to infrastructure provision is a way of spreading the cost of provision more fairly.

CURRENT ROAD FUNDING REQUIREMENTS (MAINTENANCE ONLY)

According to the COTO Document (2014) regarding road network condition and funding requirements, the budget required per year to sustain the overall road network amounts to R65.8 billion (with no expansion, strengthening, improvements, etc). The budget required per year to address the maintenance backlog for the overall road network amounts to R14.5 billion. Table 1 gives some idea of the amounts involved.

TRADITIONAL FUNDING SOURCES

Having illustrated the need to develop and improve economic infrastructure, and understanding that road infrastructure is very expensive – both from a capital and maintenance perspective – roads authorities need to carefully determine where sustainable funding will be sourced. The following are the traditional funding options:

Budget allocations from the fiscus

The bulk of the funding for roads has been by means of budget allocations directly from the fiscus. During the 1960s

Table 1: Current road funding requirements

Strengthening/regravel backlog: roads in poor to very poor condition (2013)								
Authority	Paved			Gravel			Total	
	%	Length	Cost (Rand)	%	Length	Cost (Rand)	Length	Cost (Rand)
SANRAL	11.36	2 239	19 027 022 000	0.00	0	0	2 239	19 027 022 000
Provinces 9	22.26	15 301	130 027 898 000	65.67	94 131	18 826 140 000	109 432	148 854 038 000
Metros 8	4.16	1 658	8 290 000 000	8.48	1 227	245 315 473	2 885	8 535 315 473
Municipalities	3.62	1 363	4 089 000 000	28.54	86 245	17 249 009 106	87 608	21 338 009 106
Total backlog		20 561	161 433 920 000		181 602	36 320 464 579	202 163	197 754 384 579

Note: The table does not provide for any expansions to road networks and excludes the SANRAL toll portfolio

Table 2: Projected revenues from vehicle licence fees

Vehicle licence fees	2013/14 (Rand)	2014/15 (Rand)	2015/16 (Rand)	2016/17 (Rand)	2014/15 split (%)
Eastern Cape	423 730	459 452	472 694	518 446	6.40
Free State	437 536	462 038	486 988	513 285	6.44
Gauteng	2 592 459	2 743 798	2 952 326	3 108 799	38.24
KwaZulu-Natal	1 391 888	1 420 000	1 510 000	1 570 000	19.79
Limpopo	267 034	307 034	323 614	341 089	4.28
Mpumalanga	338 424	289 424	408 895	430 566	4.03
Northern Cape	138 388	154 406	161 257	172 545	2.15
North West	277 810	372 149	398 199	418 109	5.19
Western Cape	961 515	966 881	1 001 608	1 053 258	13.48
Totals	6 828 784	7 175 182	7 715 581	8 126 097	100.00

and 1970s, the road building sector was the beneficiary of large sums of direct funding from the fiscus for the creation and improvement of the road network and transportation system. However, since the 1980s, changes in the economy and other priorities of the government at the time resulted in reduced allocations towards roads. Since the establishment of a democratic government in 1994, there has been a high demand for social infrastructure and related services. South Africa has a large number of unemployed people who need subsidised transport, health services, education and housing. As a result these demands normally take precedence over budget allocations towards economic infrastructure such as roads.

The fiscus is supported by different taxes and fees. Many of these are not direct road funding sources, but contribute to increasing revenue for the government. These include increased personal and company taxation, increasing Value Added Tax (VAT), customs and excise duties (such as import tax, and sin taxes such as tobacco and alcohol), and fuel levies.

Fuel levies are collected as normal taxes and accrue to the fiscus. To ensure transparency and accountability all revenue collected is surrendered to the national revenue fund as provided by the Constitution. All allocations are managed through a single budget process which determines the division of revenue and sectoral allocations. Funds are only earmarked for the skills levy and the Road Accident Fund (RAF), which acts as a limited liability insurance.

To provide basic service levels the government is able to provide public goods through the fiscus. This will equate to the basic maintenance and geometric (cross section) standard of roads (normal two-lane roads). Current revenue levels do not provide sufficient funds to provide equitably for higher levels of service.

Vehicle registration/licence fees and traffic fines

In South Africa, income generated from vehicle registration and licence fees, as well as from traffic fines, is collected by the provincial and local spheres of government, and is not necessarily available to transport authorities for infrastructure provision. It generally gets absorbed into the provincial fiscus or local authority budget, and is allocated in accordance with provincial or local priority investment areas. It is an important source of 'own' revenue for provincial and local government, and understanding the competing demands at this level, there can never be any guarantee that it will find its way back to the roads sector. The projected revenues from vehicle licence fees are shown in Table 2.

Development impact fees

These fees are contributions from developers to compensate the community for the extra costs of public facilities that a development needs for effective site operation. Developer contributions towards infrastructure provision are taking place in South Africa, although not on a formalised/standardised, national basis. In some instances developers make a bulk services contribution, while others provide infrastructure as part of the conditions of approval for land use amendment schemes. There are also those who do not provide/pay anything.

Developer contributions can play an integral role in financing the local supporting road network. It is, however, unlikely that developer contributions will be sufficient to fund the upgrading and expansion of higher-order roads such as the freeway network.

Fuel taxes

South Africa had a 'dedicated fuel fund' in the past, which ring-fenced funds for road projects. However, the ring-fenced levy was abolished in 1986. Since then all road maintenance and construction costs for non-toll roads have been funded from the fiscus through local, provincial and national budget allocations. Toll revenue is accounted for separately and is, in terms of legislation, only expended on toll roads.

There is still a tax levied on each litre of fuel sold in South Africa, and this levy is an important revenue generator for government. It should be noted that, apart from the allocation to the Road Accident Fund, revenue generated from the fuel taxes goes to the central fiscus for allocation across the spectrum and in accordance with the needs and priorities of government.

The reinstatement of a 'dedicated fuel fund' is being debated and demanded by many. It should, however, be kept in mind that fuel levies do not guarantee a dedicated ongoing revenue stream. Even in the pre-1986 era, the fuel levy was not CPI-linked, and this resulted in a constant battle to obtain sufficient road funding.

In the event that a dedicated or ring-fenced fuel levy is reinstated, the main issues are:

- Technology advances mean more efficient fuel consumption, with the result that the real growth in fuel sales is less per vehicle. To sustain revenue from the fuel levy, the fuel levy would need to increase by construction price adjustments (often higher than GDP growth and CPI), as well as by an adjustment factor for the improved efficiency per vehicle.
- If a fuel levy is applied/increased for every large infrastructure project, all roads authorities will demand their equitable share in terms of the vehicle kilometres travelled on roads under their jurisdiction. If not treated in this way, it would mean that cross-subsidisation is taking place. For example, users of gravel roads or poorly maintained roads will contribute through a fuel levy to those travelling on superior infrastructure.
- There are also differences in fuel consumption per vehicle. The heavier the consumption, the higher the relative fuel levy for that particular vehicle. In South Africa, older vehicles in most instances are heavier on fuel. In its extreme, those who can afford alternative fuel vehicles, such as battery-powered vehicles, will not contribute at all.

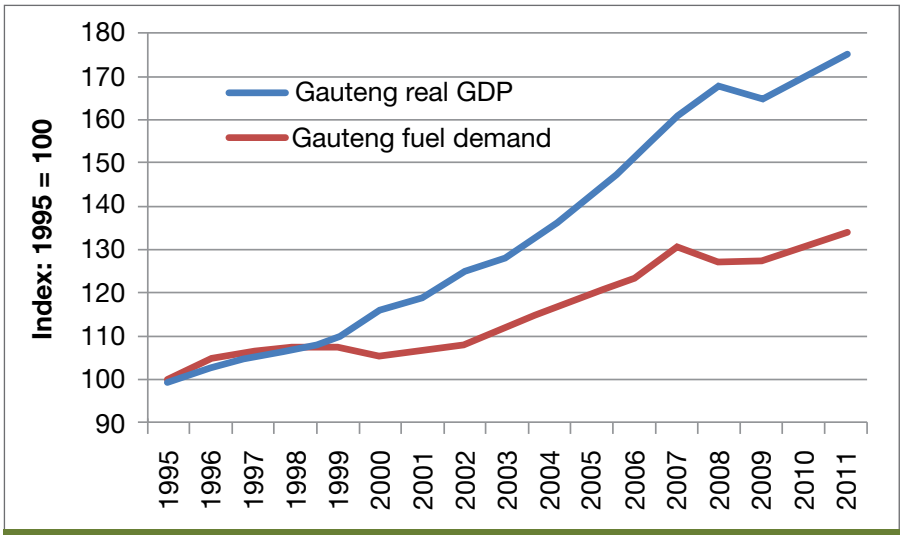

Figure 1: Gauteng fuel demand vs Gauteng real GDP

User-pays principle (tolling)

Shadow tolling

Shadow tolling is not a true user-pays option, since the user is not charged for the use of a particular road, tunnel or bridge. Shadow tolls have been used in countries such as the United Kingdom, Finland and the Netherlands, and the terminology confuses many people. No tolls are levied from road users under this approach.

Instead the shadow tolls are paid by government to the operator, based on traffic counts on the road, an agreed rate per vehicle/vehicle type and an agreed set of performance criteria.

Direct user tolling

Direct user tolling is a user-based funding mechanism for road infrastructure development. It enables the mobilisation of substantial capital funds upfront, usually through debt equity, for the construction of infrastructure such as freeways. The implementation of toll roads by governments in developing countries and countries in transition is becoming an attractive option, since:

- It allows fast implementation of infrastructure projects necessary to stimulate much needed economic growth.
- It does not require the government to make available additional funding from its current revenue base for these projects.
- It allows government to rather spend the funds on essential services, such as health and education.

Toll financing has the distinct advantage of accelerating the availability of initial funding for construction compared to traditional tax-supported highway finance. The initial capital cost for a project can therefore be financed over a shorter period than through limited tax-based budgets. As a result, the benefit of increased roadway capacity is available to the public sooner. Therefore, tolling is an equitable way of implementing the user-pays principle and does not compromise fiscal integrity.

The toll fees, or the road user charge, are calculated based on the cost of providing, maintaining and refurbishing that specific road. These toll fees should be less than the benefits, such as reduced travel times and vehicle operating costs, which a user is experiencing when using the toll road. Toll fees promote economic efficiency, and improve accountability and transparency. In contrast, in the absence of tolls, road costs would have to be borne by all taxpayers, irrespective of the extent to which they derive individual benefits from specific road infrastructure expansion and maintenance projects. Unlike a user charge, a tax does not confer a direct benefit for the payment made.

In determining the feasibility of a toll project, the economic, social and financial benefits/feasibility are determined. In order to determine the economic feasibility, a cost benefit analysis is performed. It is the primary measure of the project's viability and gives a robust indication of the value that the project can deliver to the national economy. Furthermore, micro- and macro-economic analyses are performed. The micro-economic analysis considers the same costs and benefits, but from the perspective of a range of different stakeholders (within the overall picture of benefits there are losers as well as gainers). Macro-economic analysis considers the effect of the project on the national and regional economies, including job creation and economic efficiency effects (important from a policy perspective). The economic benefits from most toll projects are evident in the development which takes place along the route or in the towns/cities connected by toll routes.

It is important to note that the ongoing expenditure for the toll project over the financial analysis period normally exceeds the initial construction costs. The financial feasibility of the project is reflected in terms of the Loan Supportable by Revenue (LSR), the ability of the project to service debt referred to as the Debt Service Cover Ratio, and the Maximum Debt Level. The J-curve provides a good overall perspective of the financial soundness of the project (Figure 2 refers).

The social benefits of toll projects (and for that matter any roads improvement project) are becoming increasingly important. Improved roads result in a reduction in travel time, which means more time with family or for leisure, less accidents and less adverse environmental and associated health impacts.

Toll tariffs should be affordable and must reflect the benefits which the road user derives from lowered vehicle operating costs (fuel, maintenance) and savings in travel time. A well balanced toll tariff will ensure optimum attraction to the toll road. In the event that the toll tariff does not reflect the benefits to the user, high levels of diversion, or alternatively poor attraction to the toll road, will take place.

The implementation of toll roads requires road funding policy certainty, strong political support and proper public communications (selling the benefits of the project).

Options for raising debt under a toll scheme

Under a toll scheme two options are available for raising debt, namely state toll road schemes and private project financing.

For *state toll roads*, tolls collected are directly used (ring-fenced) for debt servicing and all other funding requirements for the toll road network. No provision for 'profit' is made in the SANRAL toll portfolio – all revenue received from tolling is reinvested in the toll roads, and the SANRAL finances are audited annually by the Auditor General.

With *public private project (PPP)* financing, a complex process of risk identification and cost detailing is undertaken prior to the preparation of concession agreements. Risks and costs can usually be offset by benefits, and the ratio of these normally determines the feasibility of such ventures. For concessions, toll revenues are collected by the concessionaire to recover costs for debt servicing, capital expenditure, road maintenance, operational costs and a return on equity. The advantages of PPPs are, amongst others:

- The transfer of risk from the public sector to the private sector – the concessionaire assumes full risk for the road pavement condition, traffic volumes and associated toll revenue and collection, the cost associated with maintenance, rehabilitation, operations and expansions, and the cost of financing, and
- The 'off balance sheet' generation of project funding.

'INNOVATIVE' FUNDING SOURCES

Innovative transportation financing options are becoming available as a result of new technologies. New technologies with respect to vehicle identification and monitoring provide different approaches in assessing vehicle utilisation. Two such fees/charges which have been proposed, and in some instances implemented, include a fee on vehicle miles travelled (the VMT or MBUF, i.e. mileage-based user fee), and congestion charges.

VMT/MBUF: The USA is actively exploring this option whereby a fee is charged for each vehicle, based on the number of miles that vehicle travelled on any road infrastructure. This can be achieved with new technologies, or enhancing existing technologies that are linked with GPS (tracking devices/smart phones). There are already various types of truck tolling in Europe by means of satellite-linked GPS devices.

Congestion Pricing: Congestion pricing levies a fee to a user based on the costs imposed on all travellers of the particular trip being made. Heavily congested areas such as the CBD are thereby made less attractive for private vehicle usage. Since the objective of this regime is to reduce congestion, the upgrading of road infrastructure is not necessarily required. Such a pricing scheme could produce very high levels of revenue for supporting alternative forms of transportation, such as public transport.

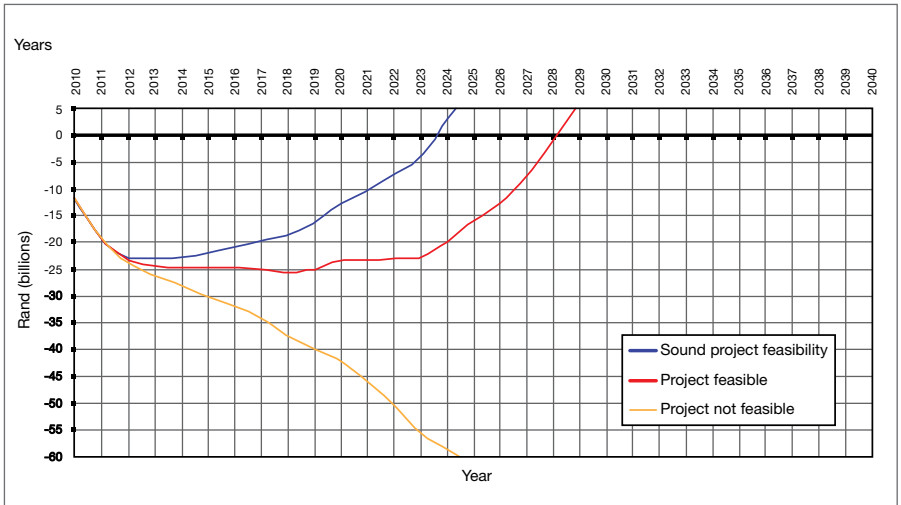

Figure 2: Projected toll project debt levels at 6% p/a inflation and 4% p/a real interest rates for different levels of feasibility

CONCLUSION

There are many different road funding options available, but in essence these are only variations of two basic options, namely a tax-based option or a user-pays option. Depending on the objective of the upgrading or maintenance actions required, the availability of financial resources and the need to accelerate projects (even if funds are not available), a specific funding option may be more appropriate or effective.

It is unfortunate that the current debate has slowed the much needed expansion of critical road infrastructure. Hopefully, the outcome of this debate will pave the way for a robust solution to our funding dilemma and will allow us to implement South Africa's need for a more efficient transport system, i.e. an optimal combination of road infrastructure and freight and public transport operations.

SOURCES:

Various SANRAL presentations

COTO Document (2014) regarding road network condition and funding requirements

Steering Committee Report (2011) regarding the implementation of toll for the GFIP