Roads review 2017

A review of the South African road network and its impact on the bituminous product industry

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Acknowledgements

This 2017 Roads Review was compiled by PA Myburgh

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Introduction

To assist members in formulating business plans based on road provision and maintenance programmes we have compiled a set of data on road lengths, condition, estimates of expenditure and projected effects on the bitumen market covering the period of the Medium Term Expenditure Framework (MTEF) up to the 2019/2020 fiscal year.

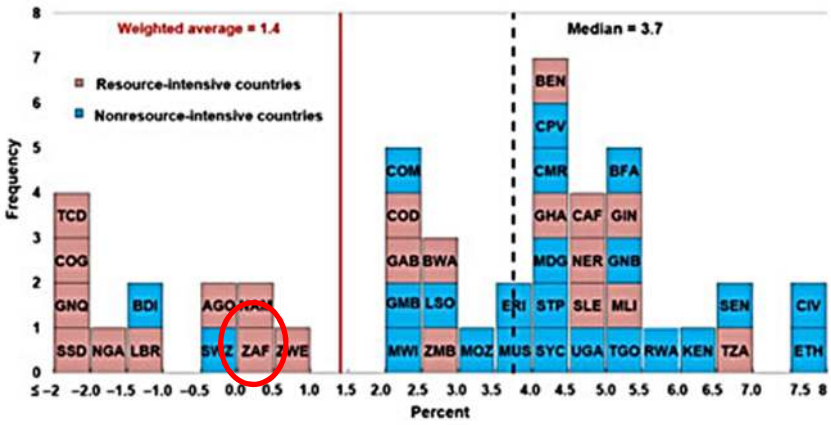
The data related to estimates of expenditure are based on the 2017 Budget Review (national and provincial), 2017 municipal budget statements and information presented on the National Roads Agency web site.

Global economic outlook

According to the IMF world growth is expected to rise from 3.1 percent in 2016 to 3.5 percent in 2017 and 3.6 percent in 2018. Stronger activity, expectations of more robust global demand, reduced deflationary pressures, and optimistic financial markets are all upside developments states *World Economic Outlook*.

Sub-Saharan Africa's growth, however, has fallen to its lowest level in more than 20 years, according to the IMF latest *Regional Economic Outlook for Sub-Saharan Africa*. While some countries like Senegal and Kenya continue to experience growth rates higher than 6 percent, growth has slowed for two thirds of countries in the region bringing down average growth to 1.4 percent in 2016.

A modest recovery in growth, to 2.6 percent, is expected in 2017, but the report said the underlying regional momentum remains weak, and at this rate, sub-Saharan African growth will continue to fall well short of past trends of 5-6 percent, and barely exceed population growth.



Source: IMF, *World Economic Outlook* database.

Using the widely accepted measure of 'recession' as two (or more) consecutive quarters of negative growth (real GDP quarter-on-quarter), the South African economy moved into recession with the reported decrease of 0,7% in GDP during the first quarter of 2017, following a 0,3% contraction in the fourth quarter of 2016.

National fiscal policy and expenditure on key infrastructure sectors

Key policy features of the 2017 budget are:

- Fiscal policy is focused on containing the budget deficit and slowing the pace of debt accumulation to maintain spending programmes and promote confidence in the economy.
- The 2017 Budget tax proposals will raise R28 billion in additional revenue in 2017/18. Expenditure ceiling reductions amount to R10 billion in 2017/18 and R16 billion in 2018/19.
- Despite revenue underperformance, the main budget primary deficit will halve from 1 per cent of GDP in 2015/16 to 0.5 per cent of GDP by the end of 2016/17.
- Net debt is forecast to stabilise at 48.2 per cent of GDP in 2020/21.
- To address elevated fiscal risks, government intends to manage the national and provincial wage bill, improving budget execution and stabilising the operations of financially troubled public entities.

Government will also consider expanding the VAT base in 2018/19 by removing the zero rating on fuel. To mitigate the effect of this on transport costs, government may consider freezing or even reducing the fuel levy.

Large conditional grants to provinces and municipalities are also being trimmed – among these are the public transport network and the municipal infrastructure grants.

As indicated by the minister of finance in his 2017 budget speech, R195.8 billion has been allocated for the development of infrastructure. A major proportion of this allocation – R72.9 billion – will go towards municipal equitable infrastructure grants, while water infrastructure and human settlements will receive R78.8 billion.

General sources of income of government entities responsible for road provision and upkeep

In terms of the Division of Revenue Act (Act no.2 of 2013) local and provincial governments are entitled to an equitable share and may receive other allocations from national government revenue, either conditionally or unconditionally.

Local and provincial government as well as other state owned entities can access various sources of financing, as follows:

1. *Equitable Share*: Local and provincial government is entitled an equitable share of the revenue raised nationally and distributed from National Treasury to the various Government departments, to provide basic services and perform the functions allocated to it in terms of the Constitution.

2. *Conditional grants* (either direct or indirect): *Direct* grants, transferred directly into the bank account of the recipient, must be used for the intended purpose and reported on accordingly. In the case of *indirect* grants, a national department or public entity performs a function on behalf of a municipality or province and no funds are transferred. Any infrastructure so developed becomes the responsibility of the relevant tier of government.

3. *Own Revenue*: Local, and in some cases, provincial governments generate their own revenue by way of rates and services charges. Surpluses generated from these sources may be used to finance assets. Transport related income includes heavy vehicle permits, vehicle licencing and

registration, parking fees and development impact levies, contributed to typically by land developers.

4. *Public-Private Partnerships (PPP's)*: These partnerships may facilitate rapid infrastructure development. Mechanisms involve models for risk sharing between e.g. a municipality and its partner who may be in a better position to raise money via debt and equity to finance projects. The development of PPP's for economically justifiable projects eases the pressure on the municipality's budget and allows for better allocation of funds towards addressing the social needs of the community.

5. *Other income sources*: These include Development Bank Loans, bonds issued by the Infrastructure finance corporation, commercial bank loans and Municipal bonds.

The state receives the funds from which it finances road provision from various sources of income like personal income tax, company tax, and VAT. For the financial year 2014/2015 these taxes contributed 35.9, 18.9 and 26.5% to the national budget, respectively. Other taxes contributed the remaining 18.7% of which the fuel levy contributes roughly 5%.

Revenue, national and local, which comes directly from the road user, include the following:

- VAT on vehicles and other transport inputs
- customs duties, excise duties and import tax on goods associated with the transport process
- levies included in the price of fuel
- license fees
- toll fees on certain roads
- fines for traffic and other violations
- levies on vehicle spare parts
- tax on tyres
- road transport permits
- axle or wheel tax
- parking and loading levies
- levies on increased traffic generation
- commercialisation (including income from assets)
- local authority tax (including property tax), and
- service levies.

Table 1 provides an overview of all the income generated by the road sector in South Africa for the period 2010 - 2014. Fuel taxes on each litre of fuel sold constitute the largest source of funding resulting from vehicle and road infrastructure use.

Other income sources include traditional bond proceeds that are used when the government needs to repay bondholders from user revenues (including taxes), vehicle-related fees, and toll receipts. Road tolls can also be charged on higher-quality road segments, bridges and tunnels operated by government authorities or private concessionaires.

Table 1: Income generated by the road sector

R -Thousand	2010	2011	2012	2013	2014	%	Collected by
Fuel levy	R 34 417 577	R 36 602 263	R 40 410 389	R 43 300 000	R 47 516 564	*29%*	National Government
Road Accident Fund*	R 14 474 058	R 16 989 071	R 17 380 217	R 20 352 981	R 22 457 948	*13%*	SOC
Fines / fees and permits	R 9 011 537	R 10 988 624	R 12 933 722	R 10 853 033	R 10 678 864	*6%*	Provincial Government
License fees	R 5 057 977	R 5 953 006	R 6 530 434	R 6 765 016	R 7 349 077	*4%*	SOC and municipalities
Toll fees: concessions**	R 3 987 937	R 4 605 700	R 5 029 190	R 5 420 129	R 5 846 819	*3%*	SOC
Toll fees: SANRAL	R 2 073 060	R 1 987 379	R 2 199 090	R 2 759 839	R 4 221 433	*3%*	SOC
CO2 emissions	R 625 891	R 1 617 353	R 1 567 382	R 1 636 848	R 1 684 160	*1%*	National Government
DSML	R 51 000	R 53 000	R 152 000	R 140 000	R 170 000	*<1%*	National Government
Pipeline levy	R 31 000	R 32 000	R 33 000	R 35 000	R 37 000	*<1%*	National Government
IP Marker levy	R 1 000	R 1 000	R 1 000	R 1 000	R 1 000	*<1%*	National Government
VAT on vehicle sales	R 28 197 380	R 31 099 740	R 34 993 000	R 37 154 040	R 37 893 660	*23%*	National Government
Import duties: vehicle	R 10 442 000	R 14 348 000	R 18 702 000	R 21 635 000	R 22 567 000	*3%*	National Government
VAT on vehicle parts	R 3 909 640	R 4 126 080	R 4 496 380	R 4 788 700	R 5 009 760	*14%*	National Government
Custom and excise levy	R 817 000	R 847 000	R 875 000	R 922 000	R 981 000	*<1%*	National Government
TOTAL REVENUE	**R113 097 057**	**R129 250 216**	**R145 302 804**	**R155 763 586**	**R166 414 285**	**100%**	
Direct income	R 69 731 037	R 78 829 396	R 86 236 424	R 91 263 846	R 99 962 865	*60%*	
Indirect Income	R 43 366 020	R 50 420 820	R 59 066 380	R 64 499 740	R 66 451 420	*40%*	

*** SARS also collects revenue on behalf of the Road Accident Fund (RAF)**
**** This is an estimate based on AADT and tariff**

Source: Krygsman

Vote 35 Department of Transport

Expenditure analysis

Over the medium term the Department of Transport will focus on improving mobility and access to social and economic activities by maintaining the provincial and national road networks, upgrading and maintaining infrastructure and improving public transport for rail and road commuters. Transfers to public entities, provinces and municipalities for infrastructure spending, operations and maintenance constitute 98.1% of the department's budget.

The transport budget is expected to increase at an average annual rate of 6.8% in the MTEF, from R56.3 billion to R68.6 billion in 2019/20. Estimates of expenditure for the MTEF are shown in Table 2 below. The expenditure for road transport is projected to grow at a mean annual rate of 8%, from R24.8 billion in 2016/17 to R31.3 billion in 2019/20 and constituting an average 45.2% of the total departmental expenditure.

Table 2: Expenditure estimates by programme

Programmes
1. Administration
2. Integrated Transport Planning
3. Rail Transport
4. Road Transport
5. Civil Aviation
6. Maritime Transport
7. Public Transport

Programme	Revised estimate	Average growth rate (%)	Average: Expenditure/ Total (%)	Medium-term expenditure estimate			Average growth rate (%)	Average: Expenditure/ Total (%)
R million	2016/17	2013/14 - 2016/17		2017/18	2018/19	2019/20	2016/17 - 2019/20	
Programme 1	392.8	2.7%	0.7%	406.9	427.2	455.9	5.1%	0.7%
Programme 2	79.0	0.0%	0.2%	81.7	86.0	91.8	5.2%	0.1%
Programme 3	18 985.5	19.1%	31.5%	19 320.3	21 217.3	22 350.5	5.6%	32.8%
Programme 4	24 799.1	8.2%	44.9%	27 128.6	29 621.6	31 271.4	8.0%	45.2%
Programme 5	253.2	1.3%	0.4%	169.9	178.7	189.2	-9.3%	0.3%
Programme 6	120.8	5.0%	0.2%	119.7	124.8	137.0	4.3%	0.2%
Programme 7	11 655.4	2.6%	22.1%	12 568.3	13 294.7	14 050.0	6.4%	20.7%
Subtotal	**56 285.9**	**9.9%**	**100.0%**	**59 795.2**	**64 950.2**	**68 545.9**	**6.8%**	**100.0%**
Direct charge against the National Revenue Fund	**1.7**	**–**	**0.0%**	**10.0**	**10.2**	**10.4**	**83.0%**	**0.0%**
International Oil Pollution Compensation Fund	1.7	–	0.0%	10.0	10.2	10.4	83.0%	0.0%
Total	**56 287.6**	**9.9%**	**100.0%**	**59 805.2**	**64 960.4**	**68 556.3**	**6.8%**	**100.0%**
Change to 2016 Budget estimate				(1 295.5)	(492.9)	(571.6)		

Source: National Treasury

Maintaining the national and provincial road network

The department of Transport's allocation to the South African National Roads Agency includes R4.8 billion for the upgrade of the Moloto Road, R29.6 billion for road rehabilitation, R13,9 billion for road operations and maintenance and R1.5 billion for phase 1 of the Gauteng freeway improvement programme. Cabinet-approved cuts of R 687.4 million in the SANRAL allocation over the medium term are expected to delay upgrades and strengthening of the non-toll network.

Taking into account the deemed substantial backlogs in provincial road maintenance, the *provincial roads maintenance grant* has been increased from R10 billion to R12.2 billion in 2020.

Improving public transport systems

The *public transport network grant*, which funds infrastructure and operations of integrated public transport networks in 13 cities is expected to increase from R5,6 million in 2016/17 to R 7 billion in 2019/20. This allocation is also expected to support construction in 13 cities and fund the operating costs of services in the cities of Johannesburg, Tshwane, Cape Town and George. It was also estimated that the commuters in these four cities would increase passenger trips from 163,280 in 2016-2017 to 308,681 in 2019-2020.

Selected performance indicators for the Department of Transport are shown in Table 3.

Table 3: Performance indicators DOT

Indicator	Programme	Outcome	Past			Current	Projections		
			2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20
Lane kilometres of surfaced roads rehabilitated per year	Road Transport	Outcome 6: An efficient, competitive and responsive economic infrastructure network	392 km	1 650 km	1 937 km	2 360 km	1 500 km	1 600 km	1 700 km
Lane kilometres of roads resealed per year	Road Transport		–[1]	3 000 km	2 438 km	3 799 km	4 000 km	4 300 km	4 700 km
Kilometres of roads re-gravelled per year	Road Transport		3 692 km	3 000 km	4 560 km	4 534 km	5 300 km	5 800 km	5 900 km
Square kilometres of blacktop patching on roads (including pothole repairs) per year	Road Transport		1 050 988 km²	810 000 km²	1 497 281 km²	1 221 968 km²	900 000 km²	900 000 km²	900 000 km²
Kilometres of gravel roads bladed per year	Road Transport		512 040 km	350 000 km	381 867 km	533 052 km	460 000 km	485 000 km	500 000 km
Number of average weekday bus rapid transit passenger trips per year: Rea Vaya (Johannesburg)	Public Transport	Outcome 6: An efficient, competitive and responsive economic infrastructure network	32 845	36 649	50 000	60 000	70 000	100 000	120 000
Total number of integrated public transport networks facilitated at the construction phase	Public Transport		3	4	11	12	13	13	13
Number of average weekday bus rapid transit passenger trips per year: My Citi (Cape Town)	Public Transport		37 000	68 310	84 686	86 380	76 895	77 664	78 441
Number of average weekday bus rapid transit passenger trips per year: GOGeorge (George)	Public Transport		–[1]	–[1]	–[1]	12 400	24 000	28 800	30 240
Number of average weekday bus rapid transit passenger trips per year: A re Yeng (Pretoria)	Public Transport		–[1]	–[1]	–[1]	4 500	9 000	50 000	80 000

1. No historical data available.

Source: National Treasury

Road oversight subprogramme

Road Oversight subprogramme of the Department of Transport reviews and analyses the performance of road transport public entities and monitors their compliance with regulations and legislation. This subprogramme also transfers funds to the South National African Roads Agency, the Road Traffic Management Corporation, the Road Traffic Infringement Agency and the provincial roads maintenance grant to provinces.

Expenditure trends and estimates for the road transport programme are shown in Table 4.

Table 4: Road transport expenditure and estimates by subprogramme

Subprogramme	Audited outcome			Adjusted appropriation	Average growth rate (%)	Average: Expen-diture/ Total (%)	Medium-term expenditure estimate			Average growth rate (%)	Average: Expen-diture/ Total (%)
R million	2013/14	2014/15	2015/16	2016/17	2013/14 - 2016/17		2017/18	2018/19	2019/20	2016/17 - 2019/20	
Road Regulation	1 222.0	521.9	158.0	34.6	-69.5%	2.1%	36.6	38.7	41.4	6.2%	0.1%
Road Infrastructure and Industry Development	34.0	35.8	39.1	34.9	0.8%	0.2%	37.1	39.0	41.5	5.9%	0.1%
Road Oversight	19 396.8	21 625.9	22 669.0	24 704.2	8.4%	97.6%	27 028.6	29 516.2	31 159.0	8.0%	99.6%
Road Administration Support	6.3	6.7	10.6	7.6	6.4%	–	7.9	8.3	8.8	5.0%	–
Road Engineering Standards	6.4	12.5	12.4	17.8	41.0%	0.1%	18.4	19.4	20.7	5.1%	0.1%
Total	**20 665.6**	**22 202.9**	**22 889.2**	**24 799.1**	**6.3%**	**100.0%**	**27 128.6**	**29 621.6**	**31 271.4**	**8.0%**	**100.0%**
Change to 2016 Budget estimate				273.6			(277.1)	(206.1)	(227.8)		

Source: National Treasury

Road Transport

Freight transport

According to the *2016 South Africa Logistics Barometer*, published by Stellenbosch University, the cost of logistics – putting freight at the right place, at the right time – as a percentage of GDP, increased from 11.1% in 2013 to 11.2% in 2014, a trend which is expected to continue, as shown, and which is higher than developed countries but competitive when compared to other developing regions.

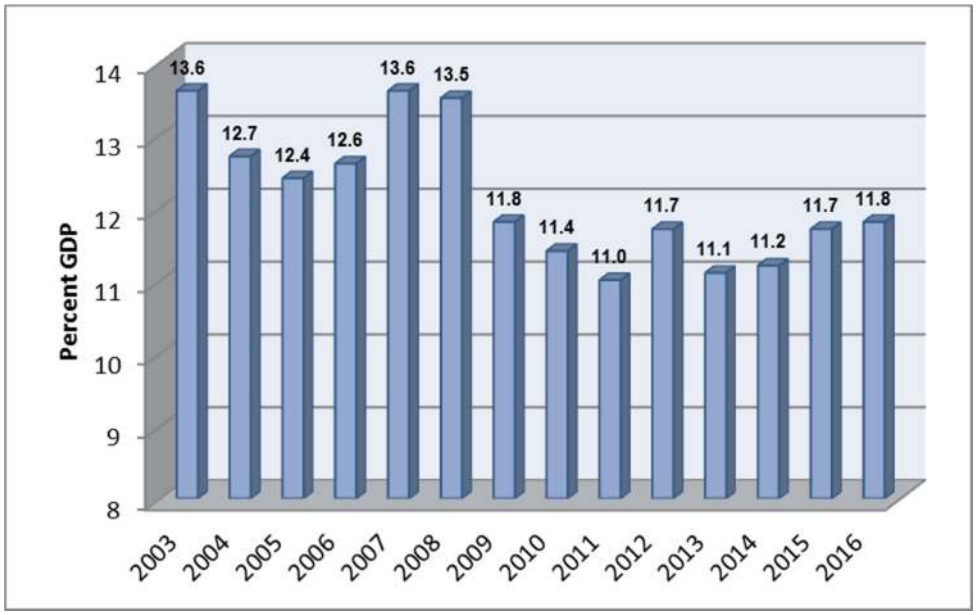


Figure 1 - Long term view of SA's logistics costs (% of GDP)

Source: Logistics Barometer 2016

Of the total costs of logistics, transport cost is the main contributor – 57% in 2014, followed by inventory carrying costs (15.2%), warehousing (14.6%) and management and administration (13.5%). This

contribution is expected to decline to 55% as a result of lower fuel costs which constituted 40% of road transport costs in 2014.

Road transport contributed 83% to the transport bill in 2014, while rail and pipeline tariffs contributed 15% and 2% respectively.

Freight volumes

The 2016 Logistics Barometer estimates that demand for land freight transport reached 848 million tons in 2014, an increase of 8.4% from 2013. It is estimated that freight volumes increased to 865m tons in 2015 and set to decrease to 856m tons by the end of 2016, mainly due to lower bulk mining exports.

Of the total volume 76% was contributed by the primary economy (agriculture and mining) while only contributing 44% to the transportable GDP. In contrast, the secondary (manufacturing) sector made up the remaining 24% of volume, but added 56% value to the transportable economy.

Transport of manufactured commodities is concentrated along the country's two key general freight corridors, Gauteng–Cape Town and Gauteng–Durban.

Modal splits

South Africa's transport infrastructure comprises three distinct transport networks:

- corridor;
- metropolitan; and
- rural

In most cases when freight is transferred from one network to the next, it requires handling. The *Logistics Barometer* estimates that 781.7 million tonnes of freight transported via road, rail, pipeline, coastal shipping and conveyor belt in 2013 was handled an average of 1.92 times, totalling 1 500 million observed tonnes. It therefore suggests that when considering aspects such as market share, the quantum *tonne-kilometres* is preferred. The tonne-kilometre modal spilt is shown in Figure 2.

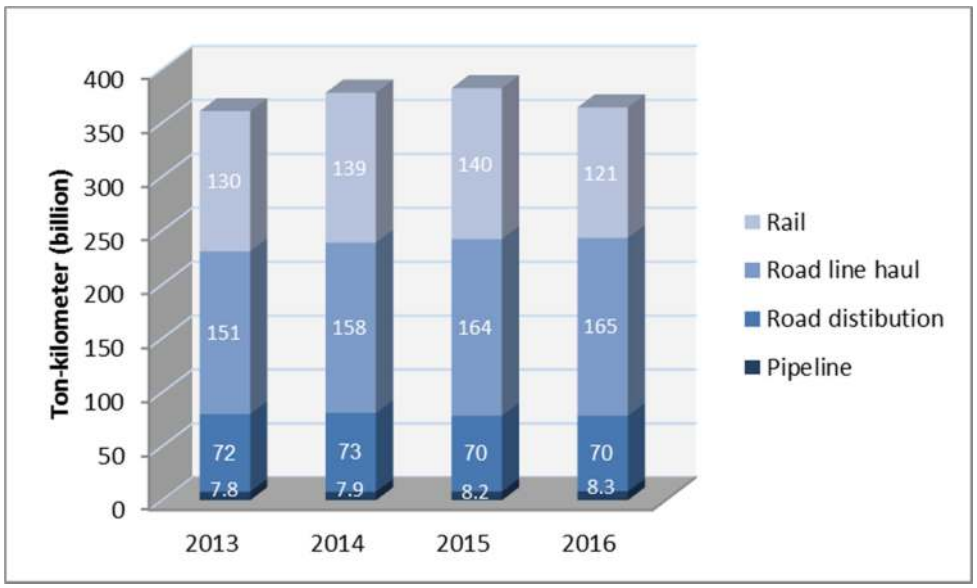


Figure 2: Ton-km per mode (2014) with expected and forecasted values for 2015 and 2016, respectively

Source: Logistics Barometer 2016

If the dedicated transport volume of 107.5 billion tonne-km carried by rail export lines, pipelines and conveyer belts in 2014 is accounted for, the balance of 272 billion tonne-km is classified as general freight. Of this volume 85% is carried by road (and 15% by rail).

In terms of the three network systems mentioned above, the general freight category can further be delineated as shown in Figure 3. The freight volumes are split as follows:

- Corridor – 130.9 billion ton-km
- Metropolitan – 77.8 billion ton-km
- Rural – 63.2 billion ton-km.

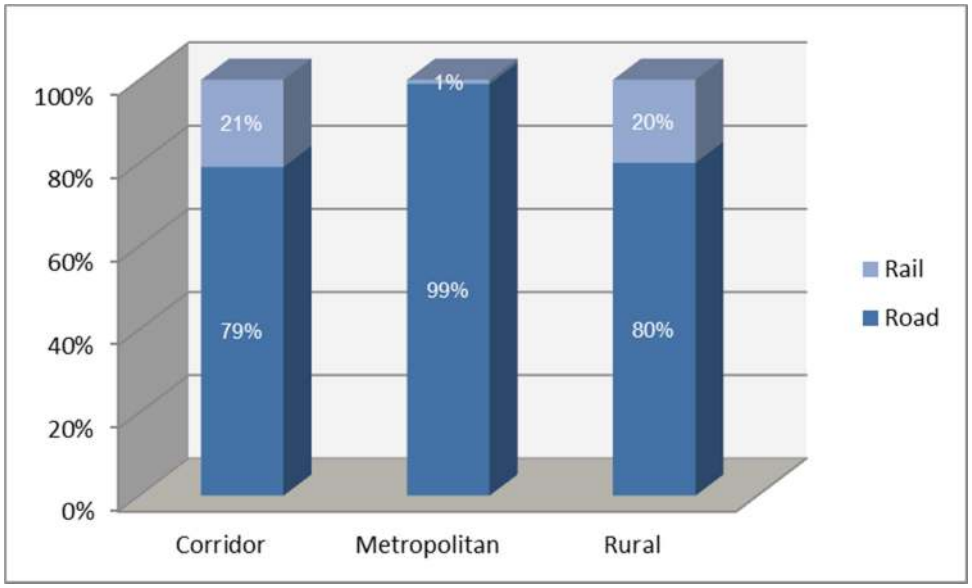


Figure 3: Typological division of general freight transport (2014)

Source: Logistics Barometer 2016

Within this context it is worthwhile noting that the *10th State of Logistics Survey*™[1] reported that, whereas in 2013 SANRAL's network represented only 3.2% of the total proclaimed road network, it carried 30.3% of the annual estimated vehicle kilometres driven in South Africa. Furthermore, it was estimated that more than 70% of the long distance road freight in South Africa is transported on the SANRAL road network – an indication of the strategic importance of the national road network.

Data gathered by the *9th State of Logistics Survey*™ from a broad range of stakeholders identifies the key challenges and cost drivers in the South African road freight sector. Respondents felt that poor road conditions (64%), the cost of fuel (52%) and a lack of law enforcement and prevalent non-compliance (43%) are the top three challenges in the industry. As far as cost-drivers are concerned, the condition of the country's roads is regarded as a critical factor by 73% of the respondents, while congestion and its associated delays are listed by 52%.

Passenger transport

According to the 2013 *National Household Transport Survey* (NHTS) published by Statistics South Africa, of the 14.2 million households in SA, about 10 million households (77%) used public transport as their main mode of travel compared to 3 million (21%) who used private transport. (See Table 5) A further 306 000 relied on non-motorised transport, of which the majority, 264 000, walked all the way to their destinations.

[1] A joint venture of the CSIR, Imperial Logistics and the University of Stellenbosch

Table 5: Main mode of transport used by household income quintiles

House-hold income quintile	Statis-tics ('000)	Main mode								Other	Total
		Public transport			Private transport		Non-motorised transport				
		Train	Bus	Taxi	Car driver	Car passen ger	Walk-ing all the way	Bicycle	Animal -drawn trans-port		
Lowest income quintile	Number	161	673	1 770	40	92	101	7	4	3	**2 851**
	Per cent	5,7	23,6	62,1	1,4	3,2	3,5	0,3	0,1	0,1	**100,0**
Quintile 2	Number	198	637	1 711	51	142	63	8	3	2	**2 816**
	Per cent	7,0	22,6	60,7	1,8	5,0	2,3	0,3	0,1	0,1	**100,0**
Quintile 3	Number	261	539	1 658	110	206	56	8	2	3	**2 843**
	Per cent	9,2	18,9	58,3	3,9	7,3	2,0	0,3	0,1	0,1	**100,0**
Quintile 4	Number	316	493	1 386	281	331	30	5	0	3	**2 846**
	Per cent	11,1	17,3	48,7	9,9	11,6	1,0	0,2	0,0	0,1	**100,0**
Highest income quintile	Number	136	243	708	947	783	14	4	0	4	**2 838**
	Per cent	4,8	8,6	24,9	33,4	27,6	0,5	0,1	0,0	0,1	**100,0**
Total	**Numbe r**	**1 073**	**2 585**	**7 234**	**1 428**	**1 554**	**264**	**33**	**9**	**15**	**14 195**
	Per cent	**7,6**	**18,2**	**51,0**	**10,1**	**10,9**	**1,9**	**0,2**	**0,1**	**0,1**	**100,0**

* Unweighted numbers of 3 and below per cell are too small to provide reliable estimates
'Other' includes scooter/motorcycle, etc.
Source: NHTS, 2013

Source: Statistics South Africa

Regarding *travel to work*, the survey states that the proportion of people using public transport to work (39%) was almost matched by the number who relied on private transport (38%). These figures materialised despite the government's call for people to make greater use of public transport and the introduction of new public transport initiatives, such as the Gautrain and various bus rapid-transit systems, to quote prior Transport Minister Peters.

Another aspect of concern is the number of learners that rely on non-motorised transport to reach their institutions of learning. According to the NHTS survey, approximately 8.7 million of the 12.7 million scholars walked all the way to their schools. As far as pre-schoolers are concerned, 61.5% walked all the way to their destinations.

Vehicle ownership

According to the live vehicle population statistics published by eNaTIS, the total number of self-propelled vehicles increased from 8.4 million in 2009 to 10.9 million in July 2017; a 29% increase over a period of 8 years. The corresponding figures for motor cars and station wagons (which make up 65% of self-propelled vehicles) show an upward shift from 5.3 million to 7.1 million; an increase of 34%.

The vehicle population as per eNaTIS on July 2017 per vehicle class is shown in Table 6.

Table 6: Vehicle population per vehicle class – 31 July 2017

Vehicle Class	Province									Total	% of total self-propelled
	GP	KZ	WC	EC	FS	MP	NW	L	NC		
Motor cars and station wagons	2 964 621	974 017	1 238 700	445 153	310 215	415 566	312 030	323 320	125 722	7 109 344	65.08%
Minibuses	121 450	51 765	34 594	23 346	12 448	22 935	18 710	22 491	5 052	312 791	2.86%
Buses, bus trains, midibuses	20 206	7 929	6 878	4 291	3 095	7 924	4 062	6 389	1 723	62 497	0.57%
Motorcycles, quadrucycles, tricycles	143 341	32 597	85 195	22 353	19 500	19 253	13 958	9 591	8 120	353 908	3.24%
LDV's, panel vans, other light load veh's GVM <= 3500kg	811 776	354 005	322 217	199 888	128 869	212 563	149 631	222 724	77 574	2 479 247	22.70%
Trucks (Heavy load vehicles GVM > 3500kg)	137 268	48 930	43 571	22 403	22 195	45 501	17 995	24 874	9 211	371 948	3.40%
Other self-propelled vehicles	36 546	32 021	38 108	16 229	35 964	27 365	22 077	16 806	9 154	234 270	2.14%
Total self-propelled vehicles	**4 235 208**	**1 501 264**	**1 769 263**	**733 663**	**532 286**	**751 107**	**538 463**	**626 195**	**236 556**	**10 924 005**	
Provincial % of total	**38.77%**	**13.74%**	**16.20%**	**6.72%**	**4.87%**	**6.88%**	**4.93%**	**5.73%**	**2.17%**	**100.00%**	**% of total tow vehicles**
Caravans	39 352	7 399	17 781	5 197	7 676	10 077	6 400	5 608	2 824	102 314	8.90%
Light load trailers GVM <= 3500kg	328 924	80 884	142 194	55 964	62 683	63 887	52 873	41 679	28 242	857 330	74.54%
Heavy load trailers GVM > 3500kg	59 414	23 416	20 505	7 410	18 170	36 072	11 061	8 784	5 741	190 573	16.57%
Total trailers	**427 690**	**111 699**	**180 480**	**68 571**	**88 529**	**110 036**	**70 334**	**56 071**	**36 807**	**1 150 217**	
Total provincial % of total	**37.18%**	**9.71%**	**15.69%**	**5.96%**	**7.70%**	**9.57%**	**6.11%**	**4.87%**	**3.20%**	**100.00%**	
All other and unknown vehicles	4 972	3 124	4 452	2 961	3 982	3 953	4 584	2 527	1 371	31 926	
Total number	**4 667 870**	**1 616 087**	**1 954 195**	**805 195**	**624 797**	**865 096**	**613 381**	**684 793**	**274 734**	**12 106 148**	
Provincial % of total	**38.56%**	**13.35%**	**16.14%**	**6.65%**	**5.16%**	**7.15%**	**5.07%**	**5.66%**	**2.27%**	**100.00%**	

Given the growth in car ownership, the sustained reliance on private transport and the high proportions of learners that walk all the way to educational institutions (and its concomitant adverse effect on the quality of learning), one can reasonably conjecture that there will be ever-increasing pressure on road capacity, in both urban and rural terrains. Notwithstanding the intention of government to promote public transport (where it is viable), increased wealth among large sections of the SA community will, no doubt, sustain a preference for use of private vehicles for a multiplicity of travel purposes.

National departments

The National Department of Transport transfers funds to SANRAL, provinces and municipalities for infrastructure development. The department also supports provinces and municipalities in implementing road asset management systems and populating them with data on road conditions and traffic to ensure efficiency in the application of limited resources to:

- maintain the road infrastructure;
- reduce vehicle operating costs; and
- lengthen the lifespan of roads.

Provincial departments

Responsibilities at this tier include mainly schools, health infrastructure, agricultural infrastructure, provincial roads and public works. Provincial revenue comprises the provincial equitable share (PES), conditional grants and own revenue. The PES allocation of nationally raised revenue is formula-driven, designed to ensure fair, stable and predictable revenue shares. Although the division is based on the equitable shares as outlined in Table 7 below, provinces have a prerogative to allocate funds in line with their specific priorities.

Provincial equitable share (PES)

The PES formula is reviewed annually. During the 2015/16 MTEF the formula, which is largely population-driven, has been updated with more recent data. Hence the allocations captured shifts in population across provinces, which lead to changes in the relative demand for public services and expenditure assignments across these areas. The total PES as well as the proportion thereof allocated to the provincial department responsible for (inter alia) roads as shown in Table 7. From this data it is evident that departments responsible for road infrastructure provision and maintenance are allocated between 3% (Free State) and 8% (Western Cape) of the total PES. The unweighted mean value is 6% over the MTEF.

Table 7: Provincial equitable share, 2017/18 – 2019/20
(R million)

Province	Department	Total Provincial Equitable Share (R million) (Departmental share %)		
		2017/18	2018/19	2019/20
Eastern Cape	Roads and Public Works	61,848 (6%)	66,167 (6%)	70,961 (5%)
Free State	Police, Roads and Transport	24,522 (3%)	26,285 (3%)	28,165 (3%)
Gauteng	Roads and Transport	86,643 (5%)	93,030 (4%)	100,227 (4%)
KwaZulu-Natal	Transport	93,757 (7%)	99,741 (7%)	106,841 (7%)
Limpopo	Public Works, Roads and Infrastructure	51,960 (4%)	55,386 (4%)	59,371 (3%)
Mpumalanga	Public Works, Roads and Transport	36,082 (7%)	38,489 (7%)	42,214 (6%)
Northern Cape	Roads and Public Works	11,720 (5%)	12,501 (5%)	13,418 (5%)
Northwest	Public Works and Roads	30,330 (6%)	32,473 (6%)	34,857 (6%)
Western Cape	Transport and Public Works	44,470 (8%)	47,452 (8%)	51,049 (8%)

Source: National Treasury

Provincial Roads Maintenance Grant (PRMG)

The Provincial Roads Maintenance Grant consists of three components. The largest component enables provinces to expand their maintenance activities *to preserve their roads assets*. The other components allow provinces to repair roads damaged by floods and rehabilitate roads that are heavily used in support of electricity production. Grant allocations reflect the differing costs of maintaining road networks in various provinces and are based on:

- provincial road networks;
- traffic; and
- prevailing weather conditions.

The grant requires provinces to follow best practices in respect of road asset managing systems and allocations will be based on a rationale which includes indicators such as vehicle operating costs and remaining asset lifespan.

The total PRMG allocation for the MTEF is R33 billion, of which about 97% is earmarked for road maintenance.

Local government

At this tier of government responsibilities typically comprise housing, municipal roads and storm water reticulation, water supply and distribution, wastewater collection and treatment, electricity distribution, street lighting, bus and taxi ranks, community halls and land fill sites.

Budgets from own revenues are supplemented by allocations (conditional grants) from National Treasury. Transport infrastructure related conditional grants to municipalities under the transport vote for the MTEF are given in Table 8.

Table 8 Transport related conditional grants to municipalities

R million	MTEF (Year ending)		
Year end	2018	2019	2020
Rural road asset management systems	107	114	120
Public transport operations grant	5,723	5,990	6,326
Public transport network grant	6,160	6,583	6,962

The South African Road Network

SA's estimated road network comprises about 613 273 km of proclaimed roads and about 131 900 km of unproclaimed roads. These unproclaimed roads, situated predominantly in rural areas, have not been formally recorded in road inventories and, hence, no tier of government is officially responsible for the maintenance and upkeep. The total proclaimed network comprises 3,5% national, 31,1% provincial, 10% metropolitan and 55,4% municipal roads. A large proportion of this network - 75% - consists of unsurfaced (gravel) roads. The unproclaimed network comprises mainly dirt roads, i.e. roads largely not engineered.

The estimated lengths of *proclaimed roads* under the jurisdiction of the provinces, SANRAL, the metropolitan municipalities and local and district municipalities are given in Table 9 below.

Table 9 The South African road network (km)

Authority	Paved	Gravel	Total
Provincial (9)	49,318	151,477	200,795
National	21,403		21,403
Metro (8)	46,904	14,461	61,365
Municipalities	37,691	302,158	339,849
Total Proclaimed	**155,316**	**468,096**	**623,412**
Unproclaimed roads[2]		131,919	131,919
Total	**155,316**	**600,015**	**755,331**

National roads

National roads are managed by the South African National Roads Agency (SANRAL) on behalf of the National Department of Transport and provide mobility of national and strategic importance and support and improve economic growth through both industrial development and export stimulation.

In 2016/17 SANRAL managed and maintained a network of some 21 400 km of national roads. The magnitude of the network is steadily growing and the long-term goal is to extend it to 35 000km

The national road network under SANRAL's jurisdiction grew from about 7 000 km in 1998 to 21 403 km in 2014 through the incorporation of existing provincial roads which form part of the identified strategic and primary road networks.

It is evident from the SANRAL 2015/16 strategic plan that its network will grow through the ongoing incorporation of provincial roads. The Road Network study, conducted during the late nineties (1997/98) as part of the preparation for the creation of SANRAL, identified the following networks:

- Core Strategic Network: 9 200 km approx.
- Secondary Strategic Network: 9 600 km approx.
- Primary Road Network: 14,000 km approx.

[2] Unproclaimed roads: Public roads not formally gazetted by any authority (estimated length)

The *Core* and *Secondary* Strategic Network were then combined to form the envisaged 19 000 km Strategic Network to fall under the jurisdiction of SANRAL from 1st April 1998. In 2010 the mandate of SANRAL was further extended to include the Primary road network, an envisaged total 33 100 km network. The distribution of the Strategic and Primary Network among the provinces is shown in Table 10.

Table 10: Distribution of Strategic and Primary Network

Strategic & Primary Network				
Province	**SANRAL current**	**Remaining Strategic Network**	**Remaining Primary Network**	**Total**
Eastern Cape	4 550	0	315	4 865
Free State	1 580	988	1 831	4 399
Gauteng Province	659	243	473	1 375
KwaZulu-Natal	1 324	780	1 395	3 499
Limpopo Province	3615	0	0	3 615
Mpumalanga	2 411	137	1 165	3 713
Northern Cape	3 189	0	1 872	5 061
Northwest Province	2 599	130	86	2 815
Western Cape	1 476	753	1 551	3 780
Totals	**21 403**	**3 031**	**8 688**	**33 122**

SANRAL's business consists of two separate operations: toll roads and non-toll roads. The SANRAL Act stipulates a distinct separation in the funding and accounting of these operations.

Non-toll roads are funded by government allocations and funds for these roads may not be borrowed or cross-subsidised from toll road income and vice versa. Of the 21 403 km of roads being managed by SANRAL, 85% of the network or 18 283 km are non-toll roads.

*Toll road*s account for about 15% (3 120 km) of the national road grid. SANRAL manages 1 832 km of these toll roads, with the remaining 1 288 km concessioned to three private investors.

The three 30 year concessioned routes are as follows:

- Bakwena Platinum Corridor Concessionaire (Pty) Ltd is responsible for the design, finance, construction, operation and maintenance of 385 km of toll road on the N1 between Pretoria and Bela-Bela and on the N4 between Pretoria and the Botswana border;
- N3 Toll Concession (Pty) Ltd operates the N3 between Heidelberg in Gauteng and Cedara in KwaZulu-Natal; and
- Trans African Concessions (Pty) Ltd manages the N4 East, which links Gauteng with the Port of Maputo in Mozambique.

Provincial roads

These roads are managed by the respective provincial authorities and primarily provide access and mobility within a region. They normally form links between towns that are not situated on the national strategic road network and support a range of economic and social functions. A road agency operates in one province – Limpopo.

The proclaimed road network per province is shown in Table 11.

Table 11 Proclaimed provincial network (km)

Province	Paved	Gravel	Total
Eastern Cape	3,670	33,348	37,018
Free State	6,730	22,000	28,730
Gauteng Province	3,671	1,832	5,503
KwaZulu-Natal	7,252	22,228	29,480
Limpopo Province	7,315	14,575	21,890
Mpumalanga	5,505	8,506	14,011
Northern Cape	3,575	23,747	27,322
Northwest Province	5,176	14,700	19,876
Western Cape	6,424	10,541	16,965
Total Provincial	**49,318**	**151,477**	**200,795**

The distribution of national and provincial surfaced roads by province is shown in Figure 4.

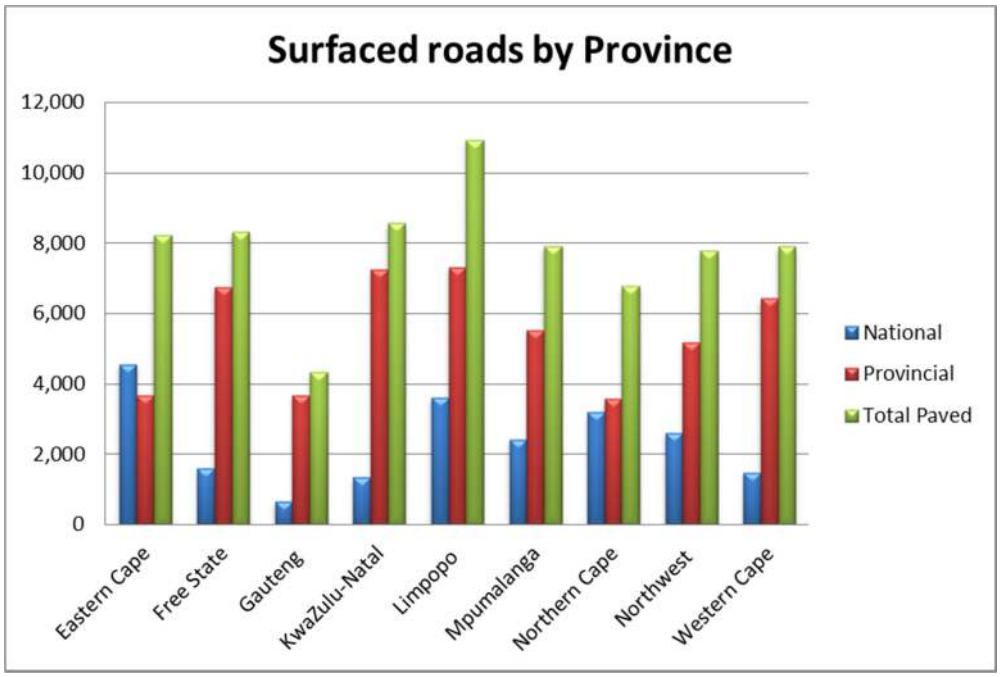


Figure 4 Distribution of national and provincial surfaced roads by province

The length of gravel roads per Province is shown in Figure 5.

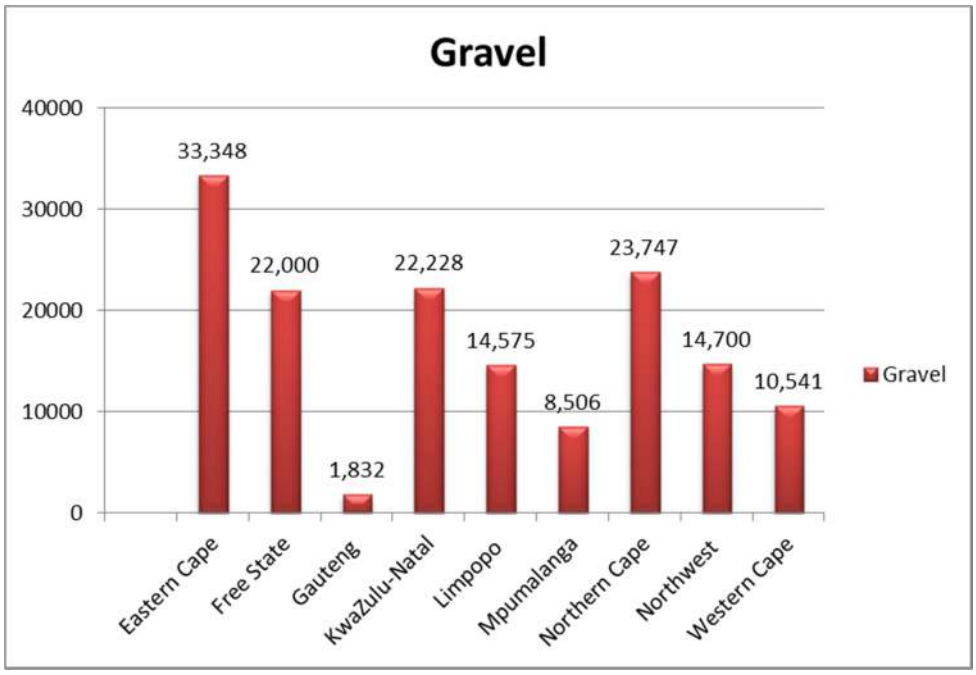


Figure 5 Distribution of gravel roads per Province

Municipal roads

The South African Constitution provides for three categories of municipalities:

- Category A - metropolitan municipalities;
- Category B - local municipalities; and
- Category C - district municipalities.

The Act also determines that category-A municipalities can only be established in metropolitan areas.

South Africa has eight metropolitan municipalities, namely:

- Buffalo City (East London);
- City of Cape Town;
- Ekurhuleni Metropolitan Municipality (East Rand);
- City of eThekwini (Durban);
- City of Johannesburg;
- Mangaung Municipality (Bloemfontein);
- Nelson Mandela Metropolitan Municipality (Port Elizabeth); and
- City of Tshwane (Pretoria).

The road networks of the eight metropolitan municipalities are shown in Table 12.

Table 12 Metropolitan municipalities road networks

Metro	Paved	Gravel	Total
Buffalo city	1,500	611	2,111
City of Cape Town	9,315	203	9,518
Ekurhuleni	6,641	1,154	7,795
eThekwini	7,682	6,498	14,180
Johannesburg	9,140	2,012	11,152
Mangaung	4,883	1,195	6,078
Nelson Mandela City	2,690	550	3,240
Tshwane	5,053	2,208	7,261

Road Condition

Since 1991, there has been a steady decline in the condition of the SA road network – especially at provincial and municipal level – for a number of reasons, ranging from curtailed allocations to roads in the past and ongoing shrinking capacity in the public sector resulting in inefficiencies in delivery.

The pavement condition of roads is assessed, at minimum, by means of a visual inspection performed in accordance with nationally accepted guidelines. For higher order roads these assessments are automated and further supplemented by criteria that are evaluated.

National roads

The condition of roads under the jurisdiction of SANRAL, based on a VCI in 2016 is listed below in Table 13

Currently 1,225 km (5.7%) of these roads area in a poor condition or worse, which are considered to be within the international norm defining a well maintained network – 10%

Table 13 SANRAL Pavement condition

Condition	Very good	Good	Fair	Poor	Very poor
Length (km)	3,695	8,940	7,629	1,139	86
% Network	17.2	41.6	35.5	5.3	0.4

Source: COTO

Provincial roads

The condition of paved provincial roads, recorded in 2013, based on VCI is shown in Table 14.

Table 14: Summary of paved provincial roads condition 2013

	Very good	Good	Fair	Poor	Very Poor
Length (km)	8,104	18,016	25,064	13,946	4,355
% of Network	11.7	25.9	36.1	20.1	6.3

Source: COTO

The condition of the provincial gravel road network in 2013 is shown in Table 15. Although the deterioration is mixed, one can conclude that:

1. The length of gravel roads in a poor to very poor condition increased from 52,546 km to 94,130 km in the period 2009 to 2013.
2. Nearly 45,378 km of gravel roads in this condition carry less than 100 vehicles per day and thus have less economic impact compared to paved roads.
3. The length of gravel road networks that require upgrading to paved standard is estimated at 9,800 km in terms of the traffic criteria, i.e. exceeding ADT of 300 vehicles per day.

Table 15: Summary of provincial gravel road condition 2013

	Very good	Good	Fair	Poor	Very Poor
Length (km)	1,886	9,3311	34,993	56,737	37,394
% of Network	1.3	6.7	24.9	40.4	26.6

Source: COTO

Road Safety

The number of road traffic crashes and the outcomes in terms of societal loss were published by the Road Traffic Management Corporation in a report: *Cost of Crashes In South Africa* in 2016.

The 'total cost of road traffic crashes' (RTCs) metric is a widely used indicator of road safety indicator to gauge the extent and magnitude of the road safety problem in a country. Reported as a percentage of GDP, it gives an indication of the consequences RTCs have on the economy and social welfare of a country.

RTC cost estimation comprises three main cost categories – human casualty costs, vehicle repair costs and incident costs. Understanding the cost elements of these categories promotes informed decision-making for proactive measures to improve road safety.

In 2015 the RTMC recorded a total of 12 944 fatalities in 10 613 fatal RTCs. Currently, only fatal RTCs and fatalities are recorded annually and therefore the other RTCs and road traffic injuries (RTIs) were estimated from historical data..

To account for under-reporting the number of deaths and fatal RTCs were increased by 5 %. The estimates of the number of RTCs and RTIs in terms of severity ranging from fatal to damage only and death to no injury are given in Table 16.

Table 16: Number of RTCs and RTIs per category

	Fatal	Major	Minor	Damage only	Total
Number of RTCs	11 144	40 117	132 609	648 560	832 431
	Death	Serious	Slight	No injury	Total
Number of RTIs	13 591	62 520	202 509	1 429 794	1 708 414

Source: Road Traffic Management Corporation, 2016

The breakdown of the total cost of RTCs by cost element and by severity is provided in Table 17, from which it is evident that the total cost of RTCs on South Africa's road network for 2015 amounted to an estimated R142.95 billion - equating 3.4 per cent of GDP.

Table 17: Breakdown of total RTC costs

Cost Category	Total cost of RTCs (R million)					
	Fatal	Major	Minor	Damage only	Total	%
Human casualty	58 332	24 794	14 546	1 358	99 030	69.3
Vehicle repair	218	809	2 902	17 395	21 326	14.9
Incident	2 018	5 113	2 740	12 723	22 595	15.8
Total cost	***60 569***	***30 716***	***20 189***	***31 477***	***142 951***	

Source: Road Traffic Management Corporation

The average cost of RTCs in comparable low- and middle-income countries is 2.2 per cent of their GDP while the average for high-income countries is 2.6 per cent of their GDP – clearly an indicator that SA has poor performance in this respect.

The *Cost of Crashes 2016* results provide an improved picture of the road safety burden carried by each stakeholder and should be used to delineate road safety roles and responsibilities across sectors as stakeholders can now be held accountable for road safety actions within their domain. Stakeholders can measure progress towards reducing the impact that crashes have on specific sectors. Understanding this cost according to different sectors and domains assist in coordinating different stakeholders and to establish partnerships according to which resources can be allocated appropriately for maximum

effectiveness. The acceptance of this monetisation of RTC costs as a measure of the real burden on the socio-economic development of the country should go hand-in-hand with accepting accountabilities and responsibilities for taking actions with an emphasis on the need to focus on the achievement of road safety results through effective implementation of the 'Safe System' underpinned by the RTSMS framework.

According to the Country Progress Report issued by the National Department of Transport to the *United Nations Decade of Action for Road Safety 2011 – 2020* road surfaces and the degree of potholes and poorly repaired and maintained roads in South Africa are responsible for the lack of protection of vehicles and the potential to cost lives or cause disablement. The quality of road signage and especially markings is seen to contribute to the lawlessness and crash rates.

In the 2013 World Health Organisation (WHO) "*Global Status Report on Road Safety*" comparative figures on the number of road deaths per 100 000 human population were given for various countries. A number of countries were randomly selected from that report for comparison purposes as shown in Figure 6 below.

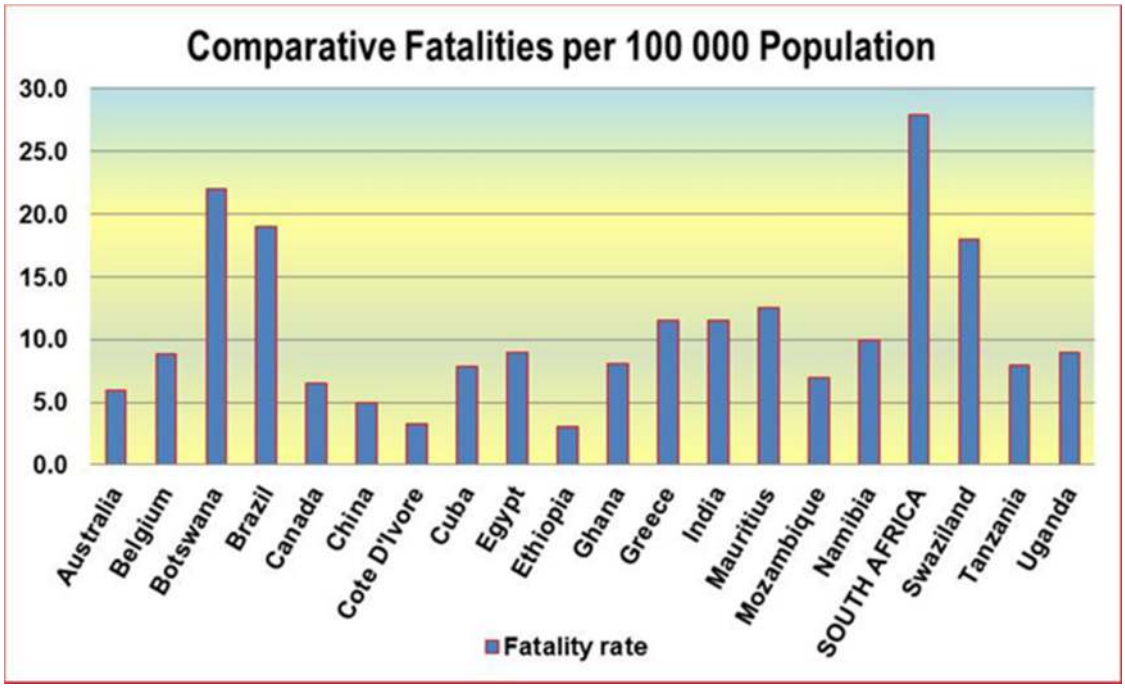


Figure 6 Comparative fatalities for selected countries

The rates in the graph above shows that the RSA recorded the highest rate of 100 countries – 27.9 in 2009 – compared to 20.0 for Kazakhstan, 22.0 for Botswana and a rate of 3.0 for Ethiopia.

Based on SAPS reports it is assessed by the Department of Transport that road and environmental conditions are a contributory factor in about 8% of fatal crashes. (See Figure 7). Within this category road conditions and road works contribute jointly about 23%.

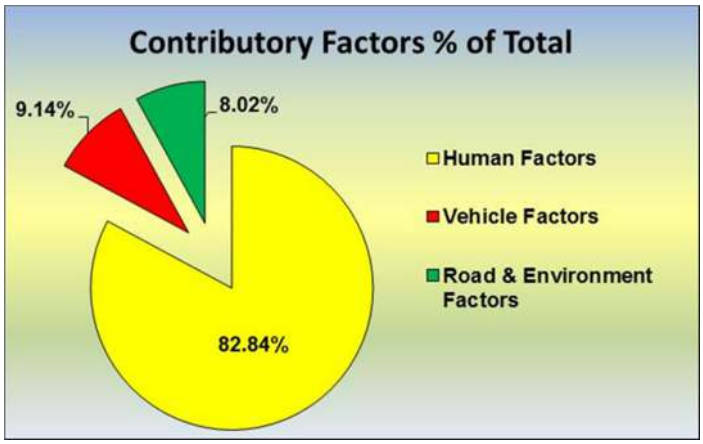


Figure 7 Contributory factors to fatal crashes.

It would seem that The National Treasury is aware of this state of affairs and considers that a continuation of this situation will raise the cost of transportation and create high future reconstruction obligations on the part of government. Clearly, therefore, South Africa's road network requires significant continuing investment to ensure that trade and commuter arteries continue to support a growing economy and efficient movement of goods and people.

This situation, which has been ongoing for about a decade, no doubt prompted government to institute the PRMG to ensure proper road maintenance of proclaimed provincial roads which had experienced a steady decline in quality.

As a result road maintenance will be prioritised to an even greater extent, as expenditure for enhancing facilities and acquiring new ones is effectively being redirected to maintenance. This is to ensure consistently improved road quality while gradually increasing the kilometres of roads resurfaced and strengthened. Data on PRMG to the respective provinces and their actual and estimates of expenditure on maintenance are presented in *Expenditure and Estimates* below.

Expenditure and Estimates

National and Provincial Roads

The department of Transport's allocation to the South African National Roads Agency includes R4.8 billion for the upgrade of the Moloto Road, R29.6 billion for road rehabilitation, R13,9 billion for road operations and maintenance and R1.5 billion for phase 1 of the Gauteng freeway improvement programme. Cabinet-approved cuts of R 687.4 million in the SANRAL allocation over the medium term are expected to delay upgrades and strengthening of the non-toll network.

Taking into account the deemed substantial backlogs in provincial road maintenance, the *provincial roads maintenance grant* has been increased from R10 billion to R12.2 billion in 2020 to finance the reseal of 13 000 lane km and rehabilitation of 4 800 km of provincial roads.

Table 18 (and Figure 8) indicate that, whereas expenditure on Provincial roads is likely to experience modest growth during the MTEF, estimates of expenditure by SANRAL shows an average growth of 17.1% over the MTEF period.

Expected ongoing transfers of roads from provinces to SANRAL will most likely lead to reallocations from Treasury.

Table 18 National and Provincial Roads Expenditure and Estimates (R million)

Year ending	08	09	10	11	12	13	14	15	16	17	18	19	20
	Expenditure and estimates										MTEF		
North West	681	729	1,063	1,043	1,092	1,314	1,477	1,287	1,429	1,462	1,671	1,695	1,816
Northern Cape	365	432	422	424	626	668	854	827	1,072	1,127	1,310	1,361	1,453
Eastern Cape	1,615	1,174	1,734	1,658	1,823	1,946	1,881	1,771	2,092	2,092	2,338	2,323	2,297
KwaZulu Natal	2,360	4,142	3,529	4,252	4,948	5,767	5,976	6,828	6,986	7,016	7,178	7,490	7,967
Limpopo Province	1,442	1,426	1,308	1,514	1,573	1,831	1,253	857	2,318	2,356	1,892	2,010	2,011
Western Cape	1,345	1,468	2,014	1,791	1,934	1,994	2,081	2,570	3,115	3,256	3,391	3,423	3,613
Gauteng	1,079	1,398	1,419	1,381	1,151	1,797	1,849	2,172	2,201	2,058	1,976	1,605	1,453
Mpumalanga	993	1,131	1,073	1,215	1,771	1,627	2,047	2,475	2,318	2,405	2,422	1,872	1,956
Free State	740	966	980	981	1,109	1,210	1,307	1,576	1,509	1,653	1,720	1,808	1,980
Total Provincial	**10,620**	**12,866**	**13,542**	**14,259**	**16,027**	**18,154**	**18,726**	**20,363**	**23,040**	**23,426**	**23,898**	**23,588**	**24,546**
Growth rates y/y	20.1%	21.2%	5.2%	5.3%	12.4%	13.3%	3.2%	8.7%	13.1%	1.7%	2.0%	-1.3%	4.1%
SANRAL	**4,685**	**10,779**	**14,529**	**15,095**	**15,360**	**15,792**	**15,044**	**16,106**	**18,218**	**26,296**	**29,662**	**36,108**	**42,195**
Growth rates y/y	42.6%	130.1%	34.8%	3.9%	1.8%	2.8%	-4.7%	7.1%	13.1%	44.3%	12.8%	21.7%	16.9%
Total Provincial and National (Rm nominal)	**15,305**	**23,645**	**28,071**	**29,354**	**31,387**	**33,946**	**33,770**	**36,469**	**41,258**	**49,721**	**53,560**	**59,696**	**66,740**
Yr/yr change (%)	26.2%	54.5%	18.7%	4.6%	6.9%	8.2%	-0.5%	8.0%	13.1%	20.5%	7.7%	11.5%	11.8%
CPI (in Year end -1)[1]	63.6	67.8	70.7	74.2	78.4	82.9	88.0	92.0	97.8	103.9	110.3	117.1	124.4
Total (Rm 2016)	**24,064**	**34,875**	**39,704**	**39,561**	**40,034**	**40,948**	**38,375**	**39,641**	**42,186**	**47,872**	**48,557**	**50,960**	**53,648**

[1] Projections based on a CPI of 6.2% pa.

Source: National Treasury

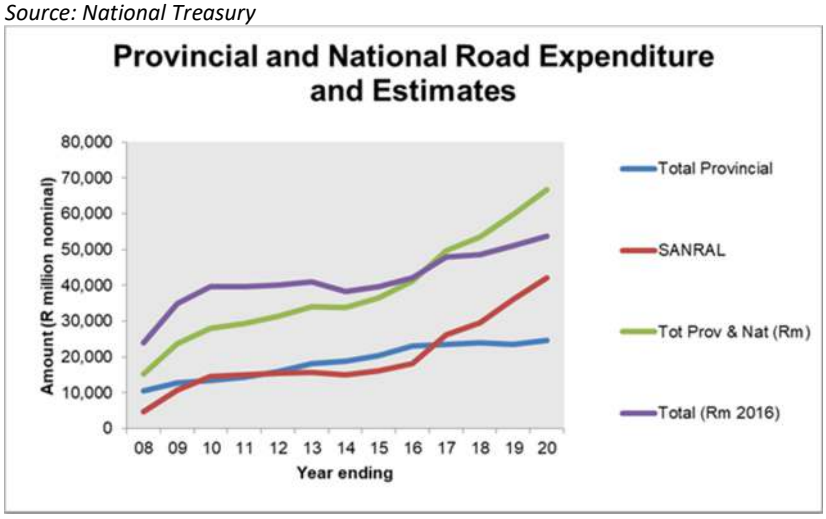


Figure 8 Provincial expenditure and estimates up to MTEF

Road Maintenance

Included in the above estimates for the MTEF are the PRMG to the provinces, shown in Table 19 which reflects a sustained – if somewhat static – commitment on the part of government to preserve this important network of roads. Since these grants are earmarked predominantly for preventive maintenance of provincial road networks and, as resealing of roads is a prominent component of road preventive maintenance, these programmes are bound to impact on the bituminous product industry, in terms of volume demands.

Figure 9 below shows the relationship between road maintenance expenditure and estimates reported by the provincial departments responsible for roads and the total PRMG for the period 2013 – 2020. The data demonstrate a firm relationship with actual and projected maintenance expenditure having increased by 54% in relation to a PRMG increase of 24% over the period. With a static position of PRMG grants referred to above, maintenance expenditure by provinces may well flatten up to 2020. The current initiatives on the part of SANRAL to extend the annual sealing period is important as it aims to ameliorate peak demands and, hence, the need to meet these spikes through importation of bitumen.

Table 19 Provincial Roads Maintenance Grant (R million)

Province	16/17	MTEF		
		17/18	18/19	19/20
North West	868	933	934	1,000
Northern Cape	905	1,074	1,120	1,200
Eastern Cape	1,235	1,435	1,491	1,512
KwaZulu Natal	1,925	1,829	1,933	2,071
Limpopo Province	1,020	1,140	1,239	1,188
Western Cape	831	940	933	999
Gauteng	502	656	607	651
Mpumalanga	1,639	1,461	893	957
Free State	1,260	1,275	1,384	1,546
Total PRMG[3]	**10,184**	**10,002**	**11,326**	**12,182**

Source: National Treasury

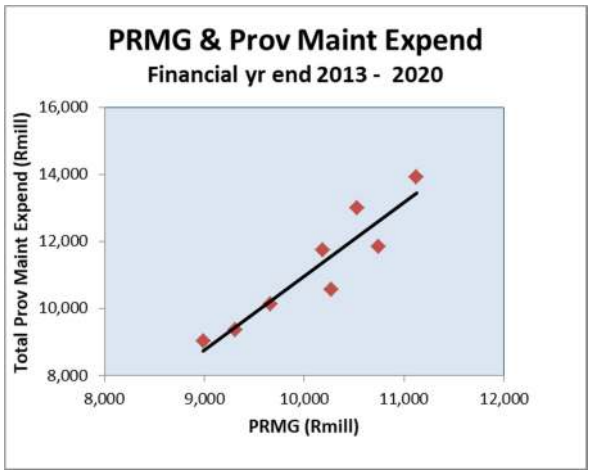


Figure 9: Relationship between PRMG and expenditure on provincial road maintenance

[3] As reported by the respective provinces

The PRMG allocations per province are shown graphically in Figure 10, which highlights a virtually static position in grants to individual provinces during the 18/19 and 19/20 periods, referred to above.

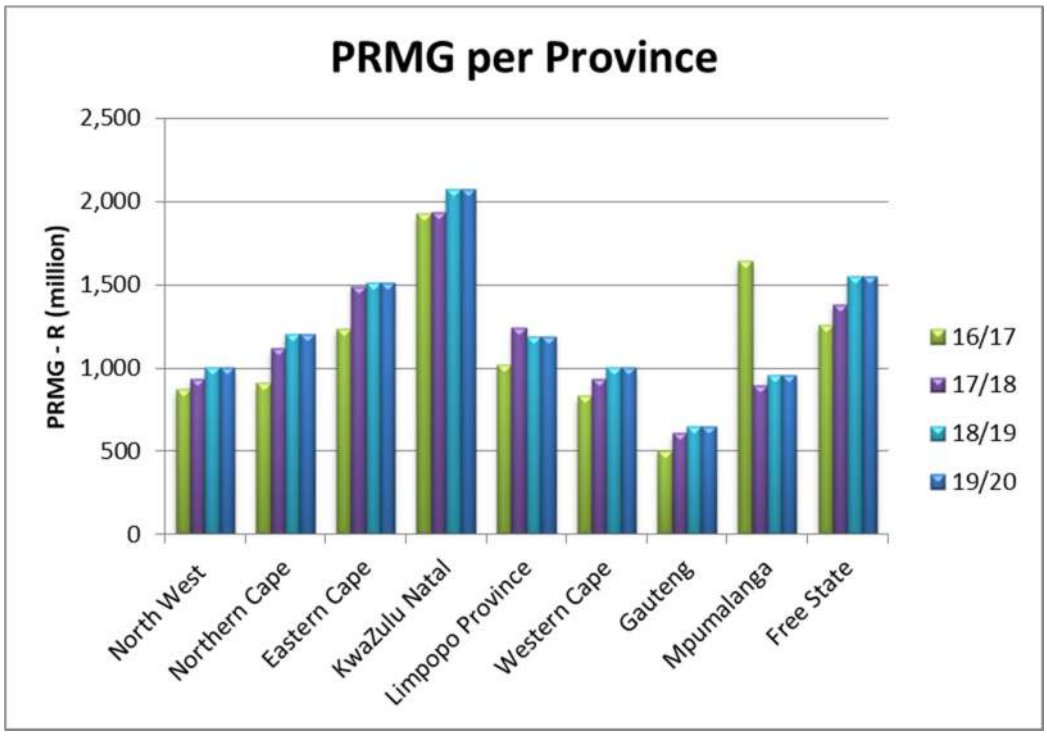


Figure 10: PRMG per province

Government has in the past asserted that the higher expenditure through this provincial roads maintenance grant is primarily responsible for a perceived improvement in road conditions. This has given rise to expectations that the number of kilometres of the secondary road network in poor or very poor condition would be significantly reduced by 2014/15. Unfortunately there is no data to substantiate this positive development.

Table 20 below shows the proportional estimates of expenditure by provinces and SANRAL, expressed as a percentage of the total estimates for rural roads over the MTEF period. It is evident that expenditure by SANRAL accounts for nearly half of the total expenditure over the MTEF period. As their road network length increases to the target 35 000 km, this proportion of expenditure is also set to grow significantly. North West and Northern Cape provinces each account for less than 4% of the total allocations, while KwaZulu Natal is the most prominent in this respect, with expenditure being about 18% of total estimates over the MTEF period.

The proportional expenditure/estimates of total rural roads expenditure since 2009 and covering the MTEF period are depicted graphically in Figure 11, which illustrates the current prominence of SANRAL and KwaZulu-Natal and, to some extent, the Western Cape in terms of road budget allocations.

Table 20: **Estimated expenditure as a percentage of total estimates of national and provincial expenditure**

Year ending	16	17	18	19
		MTEF		
North West	3.5	3.4	3.6	3.2
Northern Cape	2.6	2.6	2.6	2.4
Eastern Cape	5.1	4.7	4.6	4.1
KwaZulu Natal	16.9	16.6	16.3	14.7
Limpopo Province	5.6	5.6	3.6	3.3
Western Cape	7.6	7.4	7.4	6.5
Gauteng	5.3	6.0	6.0	5.4
Mpumalanga	5.6	5.6	3.6	3.3
Free State	3.7	3.9	3.9	3.4
Total Provincial	55.8	55.8	51.6	46.3
SANRAL	44.2	44.2	48.4	53.7

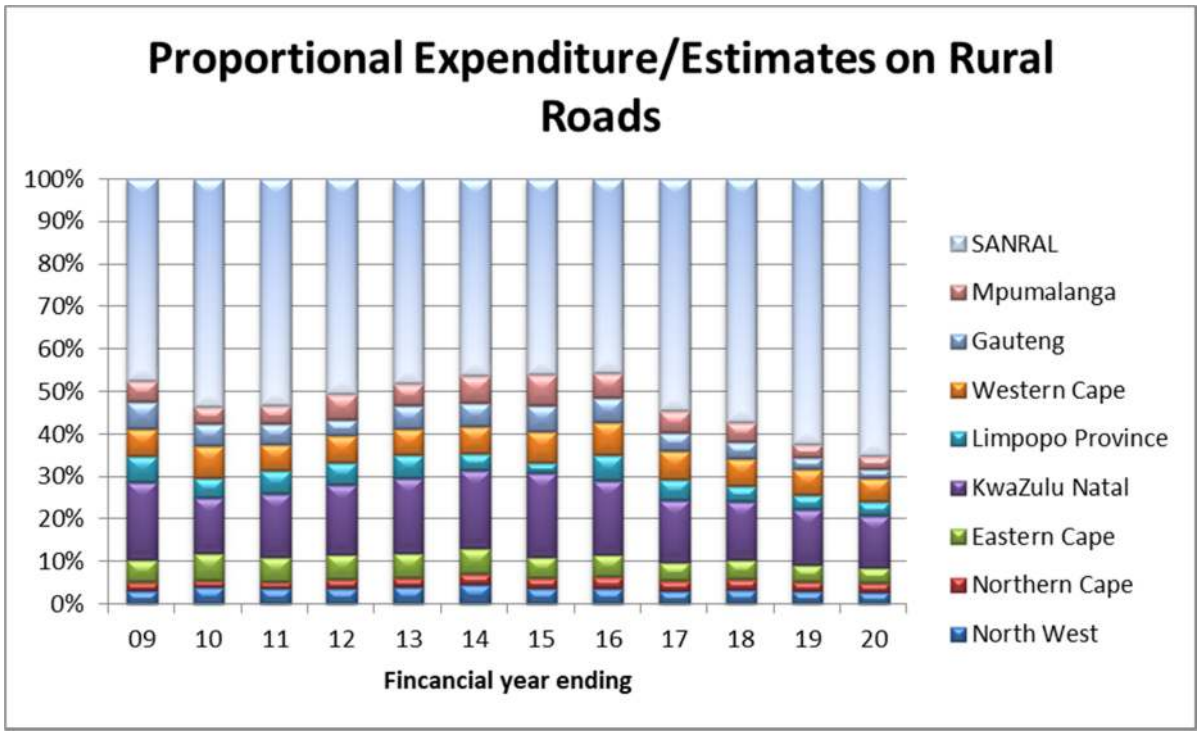


Figure 11 Proportional expenditure and estimates on provincial and national roads

Municipal Roads

The expenditure and estimates of the eight metro municipalities are given in Table 21Table 21 below. Whereas in the past it was difficult to single out road expenditure, as it was often consolidated with storm water, or included in transport infrastructure, reporting of estimates of expenditure on *road infrastructure* is now the order of the day. Two categories are presented – operating expenditure which covers costs of routine maintenance & repairs, and capital expenditure broken down into new construction, renewal and upgrading.

The estimates of expenditure on road infrastructure within these categories during the MTEF are shown in Table 21 and depicted graphically in Figure 12. Estimated expenditure in all metros is quite static during the first two years of the MTEF with some growth (8.4%) expected during the last period.

Table 21 Expenditure/estimates by Metropolitan Municipalities (R million)

	MTEF Estimates		
	18	19	20
Buffalo City			
- Opertating	131	144	158
- Captial	306	295	346
new	138	90	84
renewal	88	125	142
upgrading	80	80	120
- Total	437	439	504
Cape Town			
- Opertating	698	743	792
- Captial	1,426	1,080	1,171
new	959	594	685
renewal	186	120	127
upgrading	281	366	359
- Total	**2,124**	**1,824**	**1,963**
Erkuhuleni			
- Opertating	777	855	959
- Captial	473	564	607
new	382	435	328
renewal	50	73	258
upgrading	42	56	21
- Total	**1,250**	**1,419**	**1,566**
eThekwini			
- Opertating	567	595	624
- Captial	1,580	1,889	2,033
new	137	150	227
renewal	743	940	884
upgrading	699	800	922
- Total	**2,147**	**2,484**	**2,657**
Johannesburg			
- Opertating	642	692	741
- Captial	1,213	1,338	1,442
new	0	0	0
renewal	1,213	1,338	1,442
upgrading	0	0	0
- Total	**1,855**	**2,030**	**2,183**
Mangaung			
- Opertating	87	93	98
- Captial	197	203	185
new	193	811	809
renewal	4	7	20
upgrading	0	0	0
- Total	**284**	**295**	**283**
NMBM			
- Opertating	45	68	72
- Captial	501	514	529
new	240	290	292
renewal	52	54	58
upgrading	209	170	180
- Total	**546**	**582**	**601**
Tshwane			
- Opertating	121	130	141
- Captial	842	553	686
new	823	513	591
renewal	19	40	95
upgrading	0	0	0
- Total	**963**	**683**	**827**
Total Metro			
- Opertating	3,069	3,319	3,585
- Captial	6,537	6,437	6,998
new	2,871	2,883	3,015
renewal	2,355	2,697	3,024
upgrading	1,312	1,471	1,602
- Total	**9,607**	**9,755**	**10,583**

Source: Municipal budget statements

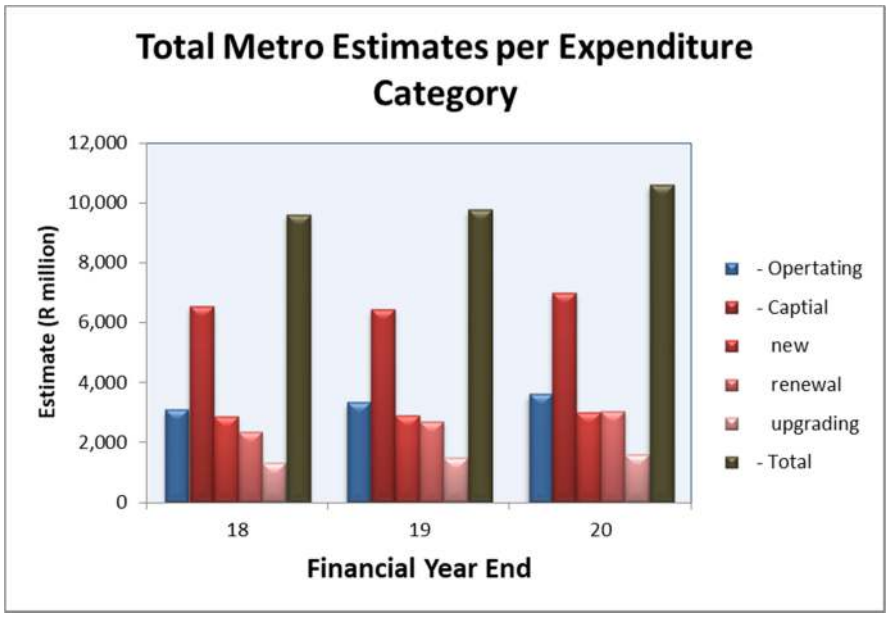


Figure 12 Metro expenditure/estimates by category

Performance of Provincial Roads Authorities

Current reporting mechanisms by rural road authorities make it possible to break down road expenditure and estimates into:

- programme support;
- road planning;
- design;
- construction; and
- maintenance.

According to their descriptions "programme support" and "road planning" are clearly overhead expenses and are construed as such in this report. It should be noted that these overhead costs pertain to the roads programme only; departmental overheads covering e.g. MEC expenses and overall administration are not included.

It is not clear whether the various provinces differentiate between the two categories of "construction" and "maintenance" in a consistent manner. In general, it can be stated that "construction" entails new roads, improvements and strengthening to increase the capital worth of the facilities. "Maintenance" generally covers routine, periodic and special operations to maintain the status quo and to stem deterioration of the road and associated furniture.

The classification adopted by SANRAL is more explicit. *Operating expenditure* include general items such as salaries, administrative and technical support and all road maintenance operations. *Capital expenditure* comprises mainly strengthening of and improvements to existing roads as well as new facilities and land acquisition.

Table 22 shows the estimated expenditure on overheads, design, *construction* and *maintenance* by the various provinces over the MTEF period.

Considering the provinces as a whole, expenditure on maintenance operations during the MTEF period is expected to amount to approximately 50% of *total* estimated expenditure, which is significantly higher than during the period preceding the implementation of the PRMG in the financial year ending 2012. This projected growth in expenditure on road maintenance – of which reseal programs form a significant component – is likely to have a positive effect on the bituminous product industry.

Table 22 Estimated provincial expenditure per category (R million)

	MTEF		
	18	19	20
North West			
-Overheads	71	72	69
-Design	11	12	13
- Construction	1245	1236	1335
- Maintenance	345	375	399
TOTAL	1,671	1,695	1,816
PRMG	933	934	1,000
Northern Cape			
-Overheads	53	55	56
-Design	4	5	5
- Construction	72	72	73
- Maintenance	1,181	1,229	1,319
TOTAL	1,310	1,361	1,453
PRMG	1,074	1,120	1,200
Eastern Cape			
-Overheads	147	165	185
-Design	14	16	23
- Construction	1157	1019	944
- Maintenance	1,020	1,123	1,145
TOTAL	2,338	2,323	2,297
PRMG	1,435	1,491	1,512
KwaZulu Natal			
-Overheads	289	306	326
-Design	43	46	49
- Construction	3,425	3,426	3,618
- Maintenance/rehab	3,422	3,712	3,974
TOTAL	7,178	7,490	7,967
PRMG	1,829	1,933	2,071
Limpopo Province			
-Overheads			
-Design			
- Construction	962	971	978
- Maintenance	930	1,039	1,034
TOTAL	1,892	2,010	2,011
PRMG	1,140	1,239	1,188
Western Cape			
-Overheads	115	131	138
-Design	217	240	247
- Construction	1,665	1,641	1,759
- Maintenance	1,394	1,412	1,469
TOTAL	3,391	3,423	3,613
PRMG	940	933	999
Gauteng			
-Overheads	84	90	93
-Design	113	65	67
- Construction	1,153	434	51
- Maintenance	627	1,016	1,242
TOTAL	1,976	1,605	1,453
PRMG	656	607	651
Mpumalanga			
-Overheads	72	39	41
-Design	71	51	50
- Construction	1,027	445	448
- Maintenance	1,253	1,337	1,416
TOTAL	2,422	1,872	1,956
PRMG	1,461	893	957
Free State			
-Overheads	38	48	60
-Design	4	3	3
- Construction	1	3	3
- Maintenance	1,676	1,755	1,914
TOTAL	1,720	1,808	1,980
PRMG	1,275	1,384	1,546
Total Provincial			
-Overheads	**868**	**905**	**969**
-Design	**477**	**437**	**456**
- Construction	**10,705**	**9,248**	**9,208**
- Maintenance	**11,849**	**12,998**	**13,912**
TOTAL PROVINCIAL	**23,898**	**23,588**	**24,546**
TOTAL PRMG (reported by provinces)	**10,744**	**10,533**	**11,123**
TOTAL PRMG (Nat Treasury)	**10,002**	**11,326**	**12,182**

Source: Provincial budget statements

Bituminous product industry performance

The movement of the RSA bitumen market potential in relation to actual and estimated[4] real (R- 2016) expenditure on national and provincial roads for the period 2003 – 2020 (financial year ends) is depicted in Figure 13 below, which shows a degree of correspondence of estimated bitumen market potential with expenditure on roads in real terms.

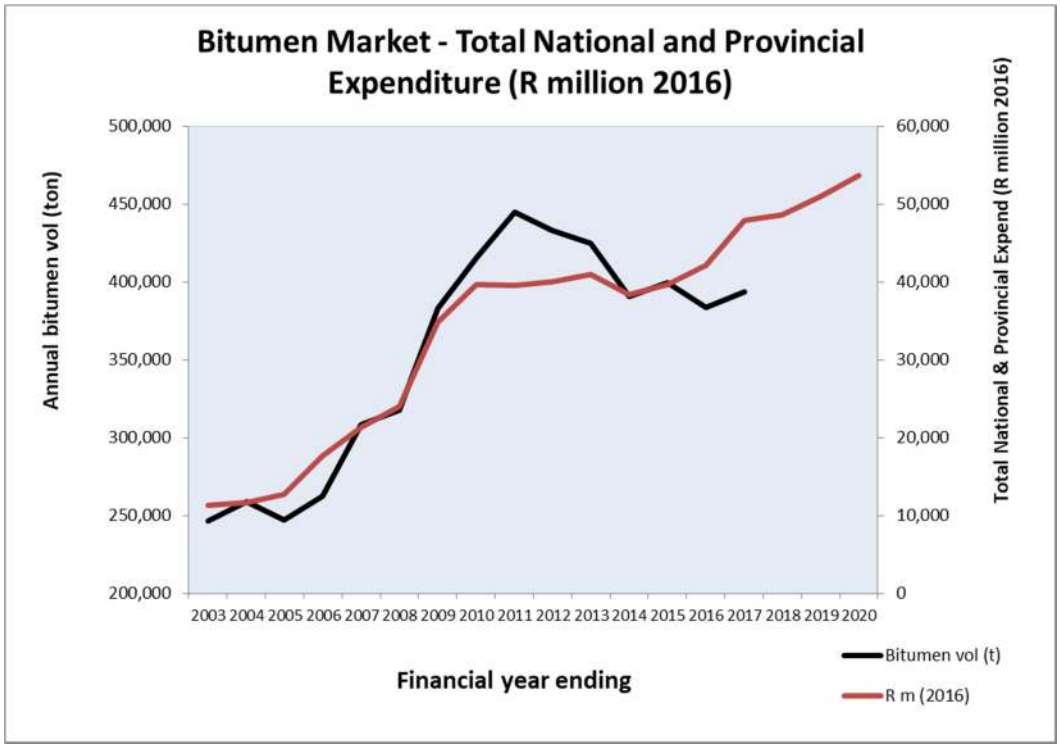


Figure 13 Bitumen market potential and provincial and national expenditure

Note: The bitumen figures depicted are those for a calendar year. The corresponding road expenditure relates to the fiscal year ending in March the following year.

A regression analysis of this relationship for the period 2003 – 2017 financial year end is shown in Figure 14 below. While a useful utility function is evident – a linear one with a coefficient of determination, R^2 = 0.8969 – one cannot postulate a rigorous relationship between the variables shown, given that the relationship is purely empirical and bitumen is not used exclusively for provincial and national road construction and maintenance. Also, from time to time, there may be disparities between bitumen price movements and general inflation. Nevertheless, the relationship is considered expedient, provided one uses it cautiously for projection purposes.

Note: The regression model used in the projections of the bitumen market potential is essentially a "demand-led" one and outcomes based on it would assume that when local demand for bituminous binders converges with net supply capacity (i.e. refinery capacity less exports) any periodic shortfalls would be met by imports. Market potential estimates would therefore incorporate imported volumes.

[4] The estimated expenditure in real (R 2016) terms is based on a forward projection, from 2018, at 6.2% pa.

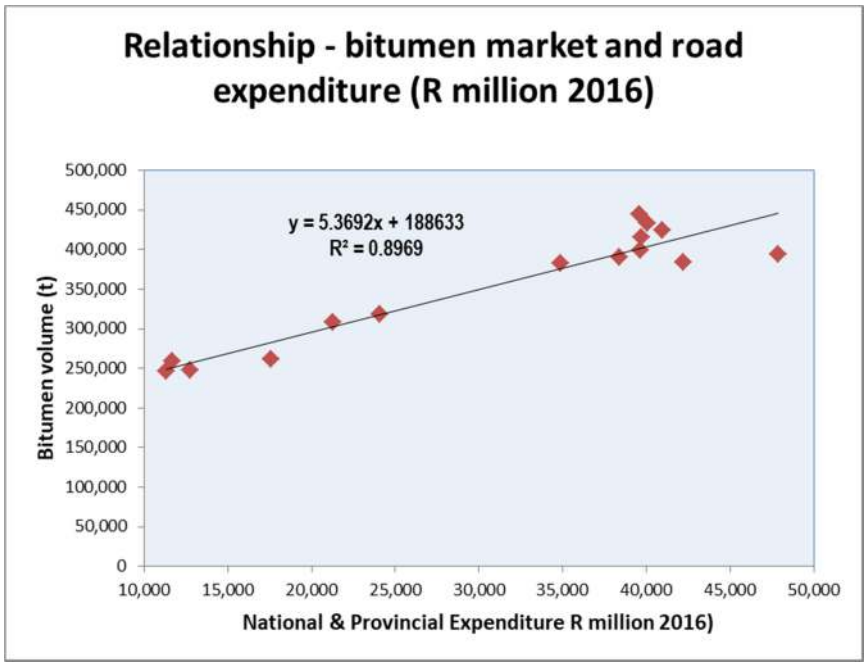


Figure 14 National and Provincial expenditure and bitumen market potential

When making projections of the SA bitumen market potential one is mindful of current issues that may have a bearing on the future market. The opposing influences of the challenges facing SANRAL on expenditure on its toll road portfolio, depleted human resources in the provincial and municipal spheres and their consequent influence on delivery on the one hand, and the growth in the PRMG, on the other, need to be considered.

In view of these uncertainties it would be appropriate to make forward projections, based on the regression analysis given above, on the median (50th percentile) values *at best*. The projected values, based on a 2016 calendar year volume of 393 784 tons, are shown in Table 23 and presented graphically in Figure 15.

Table 23 Market potential projections

Calendar year	Forward bitumen market potential projections (tons)		
	Base: Prov. and Nat. Road Expenditure (R 2012)		
	Median	Lower 80th %tile	Upper 80th %tile
2017	397 463	368 614	426 313
2018	410 365	381 516	439 215
2019	424 796	395 947	453 645

Taking into account a number of factors, such as the flattening of estimates of provincial road expenditure during the MTEF and the downward forecast of South Africa's GDP growth by both the National Treasury and the International Monetary, it may even be possible that longer term projected expenditure may not materialise.

Recorded locally produced and import volumes for the first quarter of 2017 affirms the basis of forward projections based on the volume given above (393 977 tons). There appears to be little reason to be optimistic that annual volumes will grow above the 400 000 ton mark, if indeed it reaches that level.

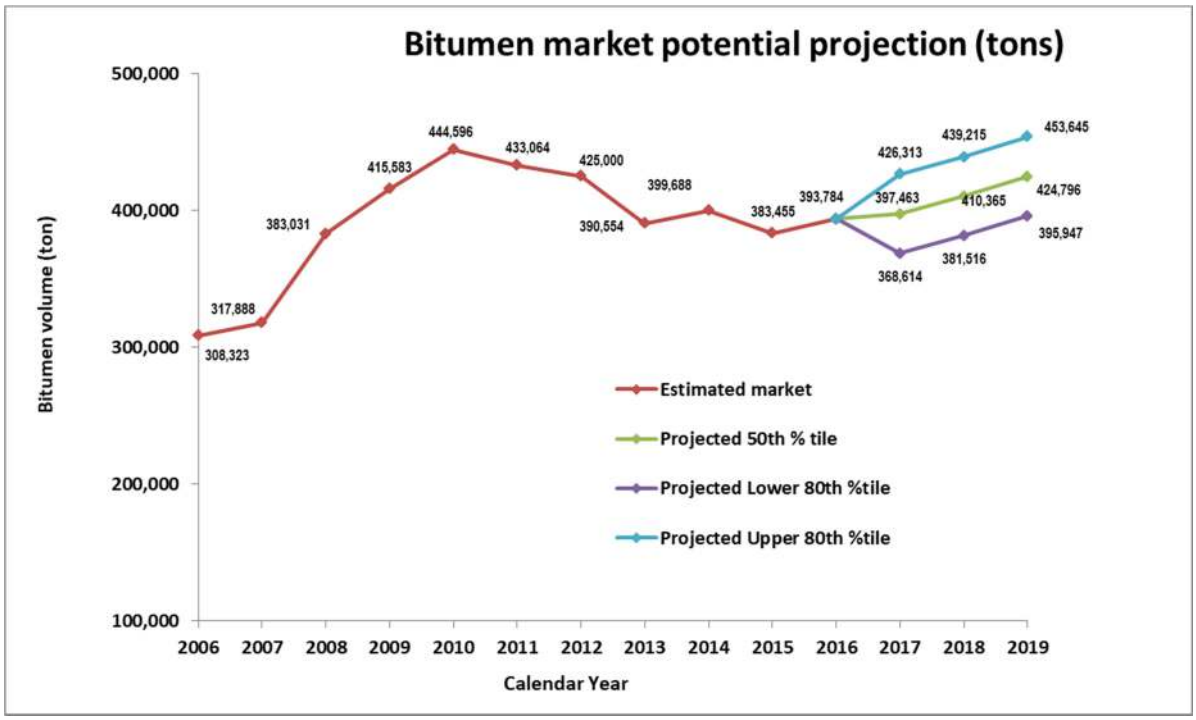


Figure 15 Projected bitumen market potential

Bitumen supply

The realistic estimated bitumen production capacity of SA's four petroleum refineries is 520 – 560 000 ton per annum to meet a local demand which can rise to 420 000 tons. This translates into a fairly tight balance between supply and demand, with little room to manoeuvre, especially during planned or unscheduled refinery shut-downs. Additionally peak demand for bitumen occurs during the warmer months which often correspond with planned refinery shut-downs and the annual construction industry holiday period.

Restrictions on the application of bituminous binder during the winter months have traditionally lead to demand tail off which was accommodated by exports to neighbouring African countries and the Indian Ocean islands, e.g. Mauritius, Reunion, Madagascar and Seychelles. However, the recent initiatives by SANRAL on the selective use and application of bituminous products during winter months may have a moderating effect on peaks and dips in demand.

A 20 tonne per hour multistage bitumen converter has been erected and commissioned this year in Cape Town that will alter the bitumen supply spectrum in the Western Cape where only 70/100 penetration grade is produced at the Chevron Refinery. The converter can produce 50/70 or even 10/20, penetration grades, the latter of which is required for EME asphalt. The converter can also produce multi-grade bitumen with performance characteristics spanning several penetration grades.

The scheduled 2017 date to produce fuels to Euro IV clean fuel specifications has now been deferred to a date yet to be announced. Plans have now been formulated to move from the current Euro II to Euro V standards, mooted for around 2020. To meet these requirements, local refineries will require an investment in excess of R40 billion to produce fuel to these specifications and would seek firm policy affecting cost recovery. Focussed as they are on the production of fuel, the impact that these proposed upgrades as well as the IMO's move to reduce sulphur levels from the current 4,5% to 0,50% by 2020,

may have on the overall production capacity of bitumen is unclear at this stage. The proposed new refinery at Coega does not have bitumen on its refinery slate.

SA imports of bitumen grew significantly over the period 2011 – 2013 as shown in Figure 16. Following a decline in 2014, volumes grew in 2015 only to decline again in 2016. There are currently no indications that import volumes will reach the 2013 peak; it is more likely to stabilise at the 2014 volumes. With the Rand/US Dollar exchange rate having nearly doubled since January 2011 (6.880) to August 2017 (13.05) the prospects for imports are somewhat uncertain, especially if there is not a formal system whereby industry can be safeguarded against escalation of product costs in current contracts.

South Africa remains a net exporter of bitumen as reflected in Figure 16.

It should also be noted that hurdles on handling imports have been addressed to some extent in Cape Town harbour with the construction of bulk storage tanks with 5 000 ton capacity.

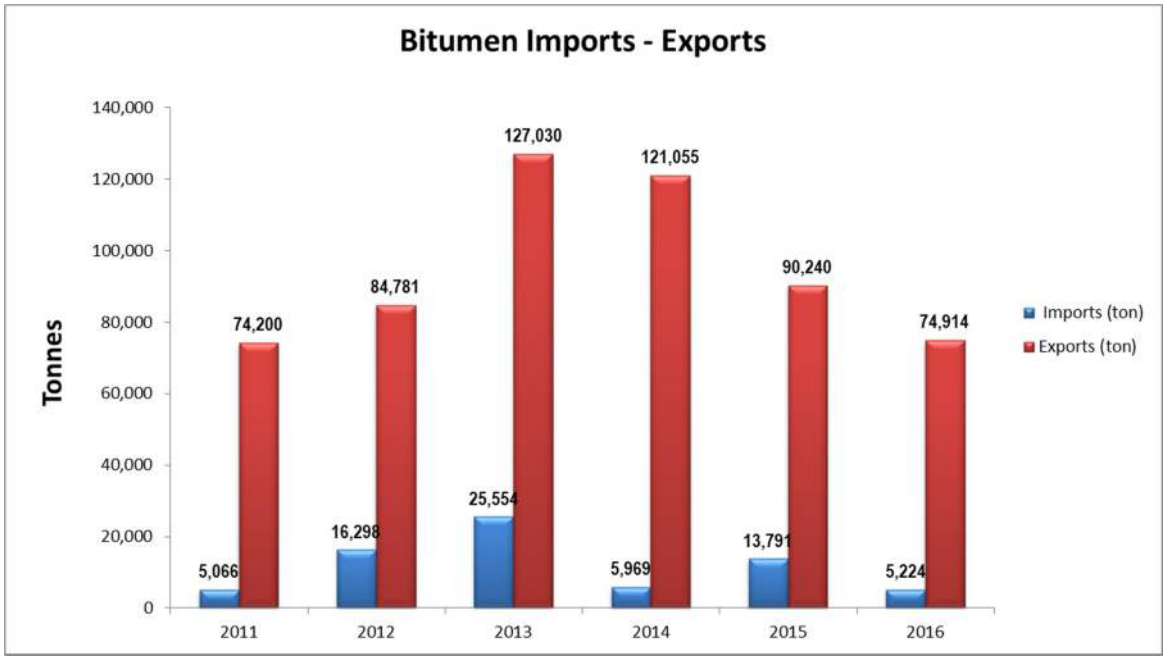


Figure 16: South African imports and exports of bitumen

Date of compilation August 2017

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