South African Reserve Bank Special Occasional Bulletin of Economic Notes

Special OBEN/23/01

South African Reserve Bank Special Economic are descriptive economic analyses with recommendations written for internal SARB discussion. They are written by staff members or fellows of the Economic Research Department and, on occasion, by consultants under the auspices of the SARB. They are released publicly on an occasional basis.

Authorised for publication by:

Chris Loewald

August 2023

South African Reserve Bank

SARB Special Occasional Bulletin of Economic Notes August 2023

Table of Contents

Contents

The views expressed in these Special Economic Notes are those of the author(s) and should not be attributed to the South African Reserve Bank or South African Reserve Bank policy. While every precaution is taken to ensure the accuracy of information, the South African Reserve Bank shall not be liable to any person for inaccurate information, omissions or opinions contained herein.

Information on South African Reserve Bank Special Economic Notes can be found at http://www.resbank.co.za /Research/Special Occasional Bulletin of Special Economic Notes/Pages/EconomicNotes-Home.aspx

Enquiries
Head: Research Department
South African Reserve Bank
P O Box 427
Pretoria 0001

Tel. no.: +27 12 313-3911
0861 12 SARB (0861 12 7272)

© South African Reserve Bank

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted in any form or by any means without fully acknowledging the author(s) and these Special Economic Notes as the source.

Special OBEN 2301* – July 2023

Review of administered prices in South Africa: Basic education

Fouche Venter

Abstract

Despite the high priority education is given in the state's budget, school fees are necessary to supplement state funding for public ordinary schools in South Africa. School fee inflation puts upward pressure on the overall Consumer Price Index (CPI). Except for 2021, since 2012, school fee inflation has consistently exceeded CPI. The main drivers of school fee inflation include decreasing state funding relative to enrolments, increasing reliance on School Governing Body teachers, an aging workforce, and cost-side inflationary pressures (wages and other operational costs).

1. Introduction

The South African Constitution enshrines the right to basic education for all South Africans. It places the responsibility on the state to "make it [basic education] progressively available and accessible".[1] The Department of Basic Education, with the nine Provincial Departments of Education (PEDs), takes the lead in realising this right. The National Development Plan (NDP) – the country's central priority-setting mechanism – highlights education as one of the three most important priorities:[2]

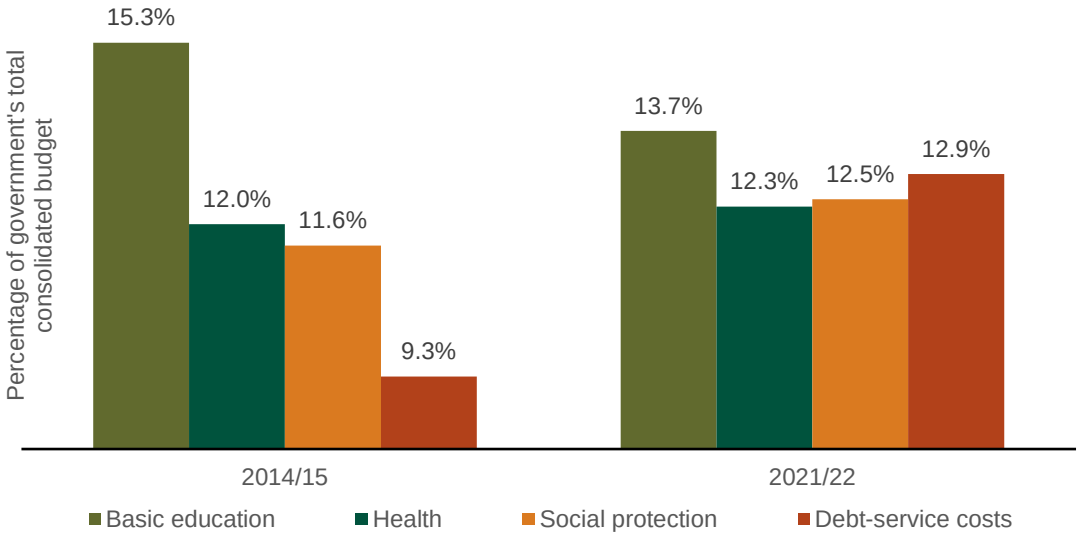
1. Raising employment through faster economic growth.
2. **Improving the quality of education**, skills development and innovation.
3. Building the capability of the state to play a developmental, transformational role.

The share of the government's consolidated budget allocated to basic education further reveals the sector's importance. Although its share has decreased over the past eight years, as shown in Figure 1, it is still the budget group[3] receiving the highest budgetary priority. In the 2021/22 fiscal year, basic education was the only budget group to still receive more than debt-servicing – the fastest-growing budget area in the past decade.

1 Republic of South Africa, 1996.
2 National Planning Commission, 2011.
3 Budget groups are subcategories of functional areas within government Standard Charts of Accounts.

*The views expressed in these Special Economic Notes are those of the author(s) and should not be attributed to the South African Reserve Bank or South African Reserve Bank policy. While every precaution is taken to ensure the accuracy of information, the South African Reserve Bank shall not be liable to any person for inaccurate information, omissions or opinions contained herein.

Figure 1: Share of the budget for the functional areas receiving the highest budgetary priority in South Africa (2014/15 and 2021/22)



Source: National Treasury, 2022.

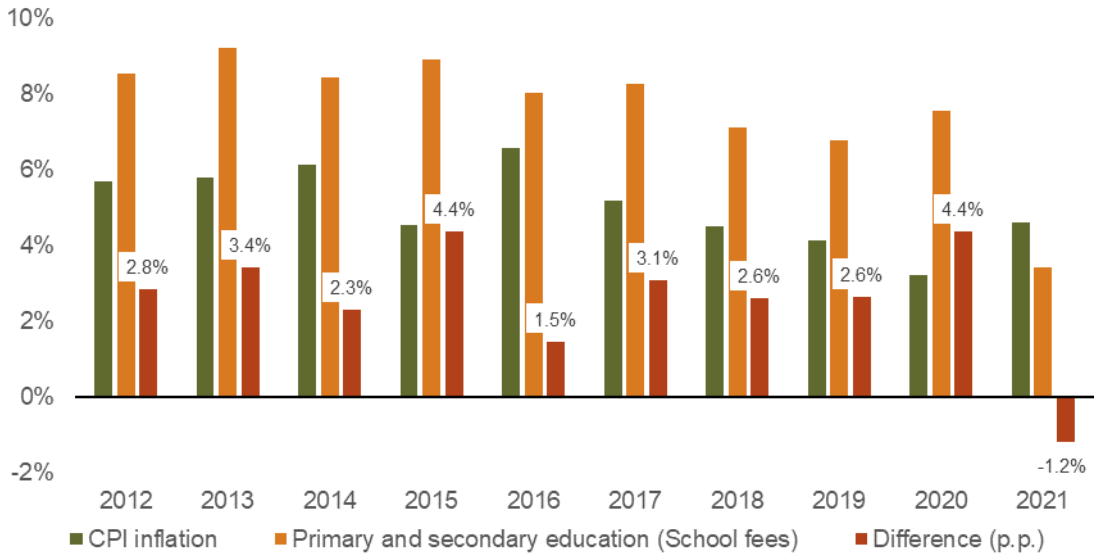
Despite the large budget, school fees are necessary to supplement state funding. These fees are especially useful in addressing equity and redress. By applying an ability-to-pay principle, state funding can favour schools in poorer areas while parents[4] from affluent areas hold greater responsibility for school fees.

School fee (tuition) information is collected by Statistics South Africa once per year, in March, as part of the consumer price index (CPI) survey. Figure 2 presents the annual growth in school fees (green) and compares it to annual CPI inflation (orange). It shows that school fee inflation generally puts upward pressure on overall CPI. Since 2012, the only time CPI inflation exceeded school fee inflation was in 2021, after the peak of the COVID-19 pandemic – a period in which households' ability to pay was severely depressed.[5]

[4] For the purposes of this note, "parents" refers to all caregivers responsible for paying school tuition.

[5] The relationship between ability to pay and school fees is discussed in more detail in Section 3.3.

Figure 2: Relationship between CPI and school fee inflation (2012–2021)



Source: Statistics South Africa, 2022.

This economic note reviews the potential drivers of school fee inflation. Section 2 describes the school fee-setting mechanism and identifies potential drivers of inflation, Section 3 analyses these drivers to gain insight into their influence on school fee escalation, and Section 4 summarises the findings and proposes potential recommendations to achieve price stability.

2. The current price-setting mechanism

The analysis in this note focuses on school fees at ordinary public schools, where more than 95% of South African learners are enrolled.[6] A high-level review of other emerging market economies indicates that South Africa is not unique in its approach to funding public school education. Most countries employ differential funding, with some favouring poorer schools, like South Africa, and others favouring lower grades, like Indonesia, Colombia and the Republic of Korea. In general, those favoured by the funding allocations do not charge school fees. Schools that can charge fees have the autonomy to set the level, with no evidence of significant tuition fee regulation.

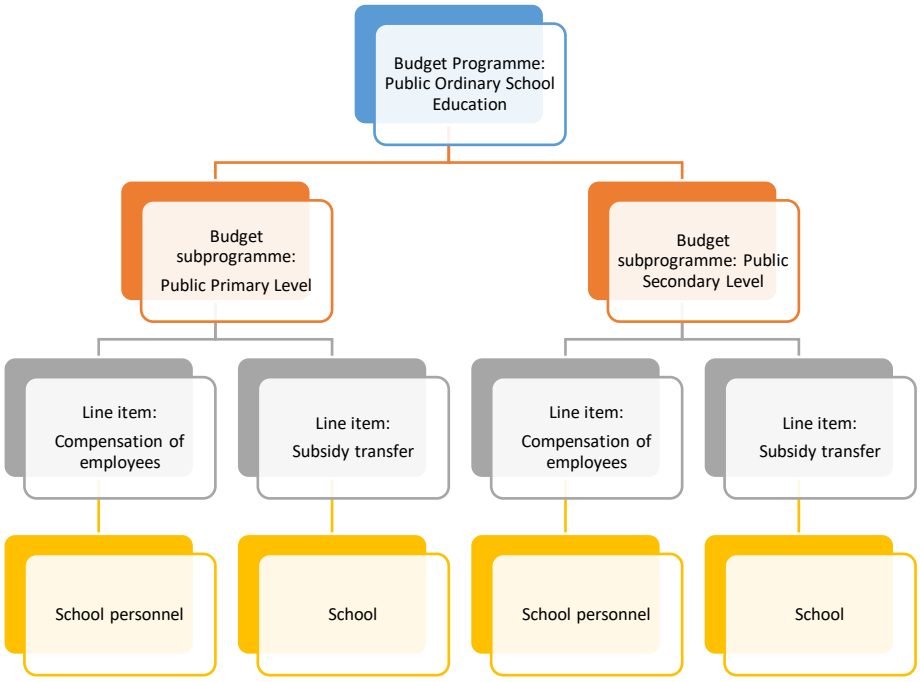
The South African Schools Act 84 of 1996 (SASA) aligns with the constitutional requirements by providing "for a uniform system for the organisation, governance and funding of schools".[7] Chapter 4 of the Act, covering the funding of public schools, is particularly important for this review. It obligates the state to "fund public schools from public revenue on an equitable basis in order to ensure the proper exercise of the rights of learners to education and the redress of past inequalities in education provision".[8]

Figure 3 shows the funding flow from each PED to their schools and personnel. The PEDs fund ordinary public schools through the Public Primary Level and Public Secondary Level budget subprogrammes in the Public Ordinary School Education budget programme. State-

6 Department of Basic Education, 2015–2021.
7 Republic of South Africa, 2011.
8 Republic of South Africa, 2011.

funded school personnel are allocated their salaries, benefits and allowances directly from the Compensation of Employees line item, while a lump sum allocation is provided to schools through a direct subsidy transfer for non-personnel operational costs.

Figure 3: Provincial department of education funding flow to schools and their personnel



Personnel funding is determined by the number of posts funded by the department, guided by the post-provisioning norms and the wages negotiated with the teacher unions. The subsidy transfer to the school is determined by the national table of targets for per-learner allocations gazetted by the Minister of Basic Education each year, which the province adjusts based on available funding.

Both the post-provisioning norms and the targets for per-learner subsidy allocations are designed to be, among other things, progressive. The post-provisioning norms include a poverty factor, which increases the weight of learners in schools with higher poverty ratings. It requires the PED to "set aside a certain percentage of its available posts for poverty redress based on the department's relative level of internal inequality".[9]

For the subsidy transfer, schools are categorised by income quintiles, with the lowest quintiles receiving the highest allocation per learner, decreasing progressively as the quintile increases. Schools in the lowest three quintiles are categorised as 'no-fee schools', meaning that they are prohibited from charging school fees. The national allocation table for 2021–2023 is provided below as an example.

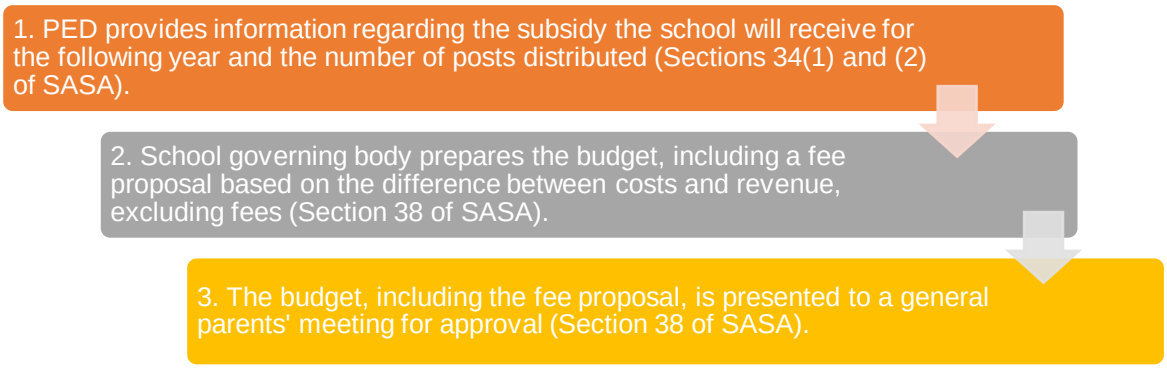
[9] Department of Basic Education, 2003.

Table 1: National table of targets for the school allocations (2021–2023)

Allocation per learner	2021	2022	2023
National quintile 1– 3	R1 466	R1 536	R1 610
National quintile 4	R735	R770	R807
National quintile 5	R254	R266	R279

Given that public funding may be insufficient and that there are parents able and willing to pay, the Act allows schools to supplement state funding and the state-funded staff complement through, among other things, school fees (Section 39 of SASA). Figure 4 shows the annual budgeting and school-fee-setting process.

Figure 4: Process for fee-paying schools to set annual school fees



For fee-paying schools, school fees close the gap between budgeted expenses and the amount the state provides. This means that if the school budget escalates or state funding decreases, school fees will likely increase. This framework guides the identification of the inflation drivers reviewed in the next section.

3. Inflation drivers

3.1 Compensation of employees

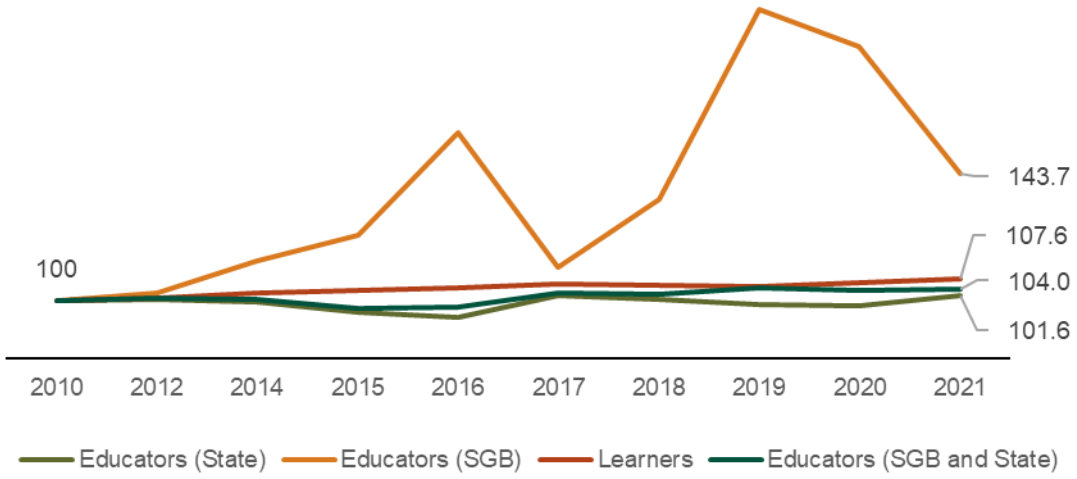
3.1.1 School governing body-funded teachers

School governing bodies (SGBs) are empowered to hire additional teachers if they deem the number of state-assigned posts to be insufficient. These additional posts are then funded through school fees. Consequently, if there is a meaningful decrease in the number of state-funded posts, average school fees will increase as SGBs attempt to ensure adequate staffing.

The number of state-funded teachers relative to the number of learners has decreased over the past decade. Spaull, Lilenstein and Carel (2020) found that, between 2012 and 2016, the number of state-employed teachers decreased by 2% despite an increase of 3.4% in enrolments over the same period. Figure 5 shows that this trend has been prevalent for the larger part of the past decade and that SGBs have been partially successful in compensating for it. On average, the number of SGB-funded posts has increased faster than the number of state-funded posts and the number of enrolled learners. Between 2010 and 2021, on average,

state-funded teachers have increased by just under 1.6%, compared to SGB posts, which increased by 43.7%. However, total employed teachers increased by only 4% compared to the 7.6% that would have been required to compensate for the relative decrease in state-funded teachers.

Figure 5: Growth in state-funded educators compared to SGB-funded educators in ordinary public schools



Source: Department of Basic Education, 2015–2021.

The occurrence of SGBs attempting to compensate for fewer state teachers relative to learners is particularly apparent between 2010 and 2016. During this period, the number of learners increased by 4.5% while the number of state-funded teachers decreased by 2%, leading to a 58% increase in the number of SGB posts – mostly funded by school fees. The same trend is observed between 2017 and 2019.

The opposite is observed from 2019 onwards. Between 2019 and 2021, state-funded teachers increased by 3% and SGB-funded teachers decreased by 28.3%, leading to a net decrease in total teachers of 0.5%. During the same period, learners increased by 2.4%, leading to a decreased teacher-learner ratio. The decrease in SGB teachers after 2019 was too large to maintain the teacher-learner ratio.

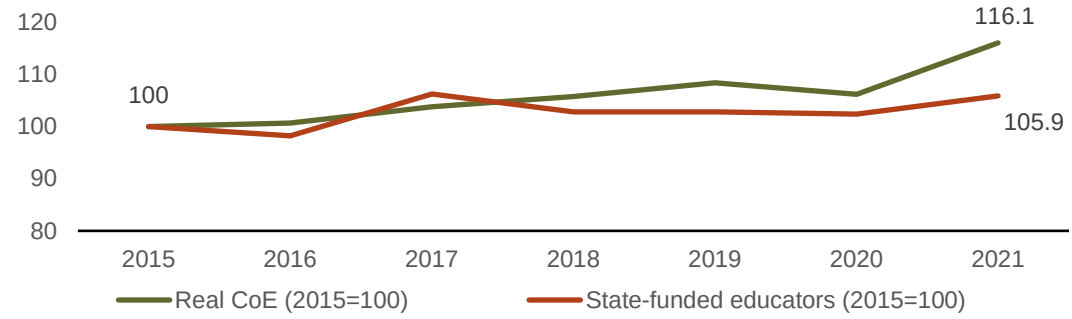
Although the picture changes somewhat after 2019, school fee inflation has likely been driven significantly by fee-paying schools increasingly relying on SGB posts as the number of state-funded teachers decreases despite increasing learner numbers.

3.1.2 Wages

Increasing wages drive up school budgets. Spaull, Lilensteing and Carel (2020) indicate that, between 2008 and 2019, educator wage inflation has consistently outpaced CPI inflation, averaging 9.2% over the period. Figure 6 indicates similar results. As a proxy for teacher salaries, the graph compares the growth of PED spending on compensation of employees in ordinary public schools, in real terms, to the growth in the number of teachers funded by PEDs.

The significantly faster growth in real compensation implies consistently above-inflation salary increases.

Figure 6: Growth in PED spending on compensation of employees in ordinary public schools compared to the number of state-funded educators



Source: National Treasury, 2022; Department of Basic Education, 2015–2021.

There are two salary drivers:

1. Teacher unions have consistently been able to negotiate above-inflation increases in salary notches

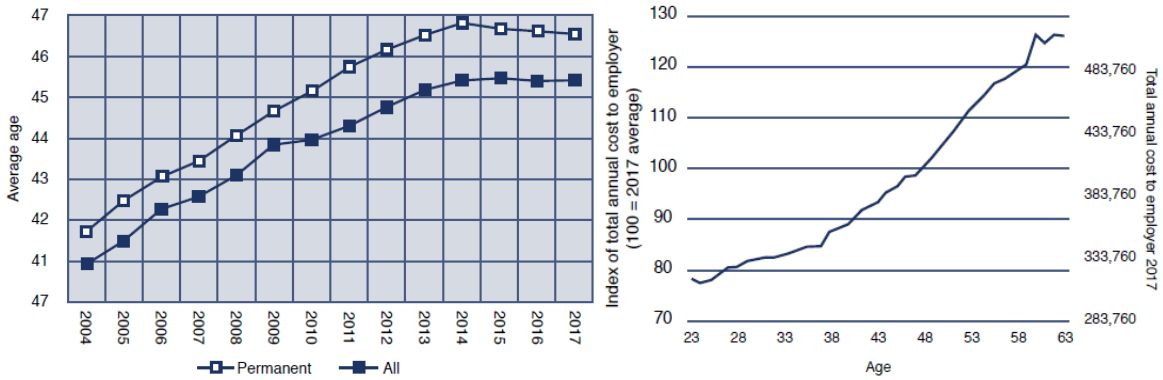
Importantly, based on research by Gustafson and Maponya (2020), South African teachers' pay is not excessive by international standards, and when purchasing power is considered, South African teacher salaries are comparable to those in other middle-income countries. Collective bargaining, therefore, seems to result in reasonable outcomes.

However, the disconnect between the wage increases negotiated with organised labour at a national level and the budgets allocated to PEDs causes difficulties. When the negotiated wage increases are higher than the planned compensation budget increases, PEDs have no option but to decrease post-provisioning. School fees are consequently driven up by SGBs employing more teachers (See Figure 5) and paying them above-inflation wage increases as centrally negotiated increases.

2. South Africa has an ageing teacher workforce

In Figure 7, the graph on the left shows South Africa's average teacher age and how it has increased over time. The graph on the right shows the relationship between age and average wage. When considering these two graphs together, it is clear that South Africa's ageing teacher population is putting further upward pressure on PED and SGB compensation budgets.

Figure 7: Ages and wages



Source: Spaull, Lilenstein and Carel, 2020[10].

The Department of Basic Education's 2020 Action Plan to 2024 shows that most South African teachers are aged between 45 and 60. This major cost pressure will decrease in the future as retiring teachers are replaced with entry-level ones. It has been estimated that the transition could decrease the average salary by up to 15%.[11] Besides the substantial fiscal relief, it will also relieve the cost pressure on schools for SGB-funded teacher salaries.

The most important caveat to this outcome is that enough young teachers are trained and employed. The Funza Lushaka Programme is a full-cost bursary programme offered to university students on the condition that they teach in the public schooling system after completing their studies. Although there are challenges, the programme has successfully driven up the supply of teachers aged 30 and below.[12]

Above-inflation negotiated wage increases and an ageing teacher population have driven compensation of employees up, putting upward pressure on schools' budgets. Because provinces have not been able to adjust budgets to the wage increases, fewer state-funded teachers have been employed, leading to more SGB posts, higher compensation budgets and, ultimately, higher school fees.

3.2 Non-personnel recurrent spending

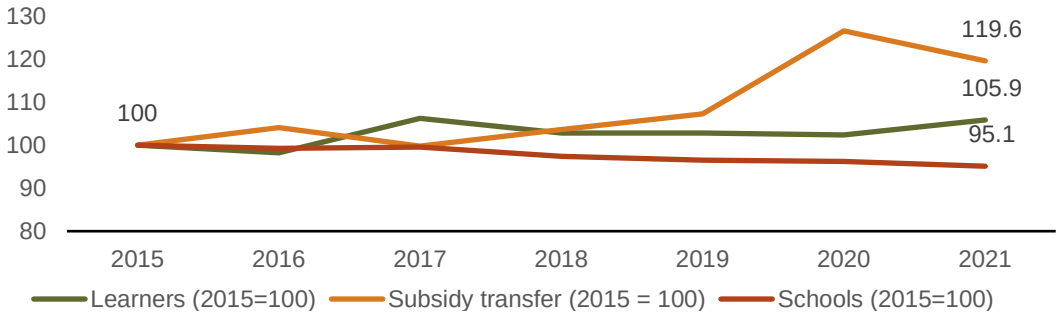
3.2.1 Subsidy transfer

The subsidy transfer is earmarked for non-personnel operational costs: "Recurrent and small capital items required by the schools as well as normal repairs and maintenance to all the physical infrastructure of the school. Moreover, the school allocation is primarily and exclusively intended for the promotion of efficient and quality education in public ordinary schools."[13]

10 Spaull, Lilenstein and Carel, 2020, sourced these graphics from work done by Gustafson (2019). Unpublished memo on PERSAL 2004-2017: Ages and wages. Department of Basic Education.
11 National Treasury, Department of Basic Education, KwaZulu-Natal Provincial Treasury, Western Cape Provincial Treasury, 2017.
12 Department of Basic Education, 2020.
13 Department of Basic Education, 2006.

Figure 8 compares subsidy growth (aggregated across provinces and adjusted for inflation) to the growth in the two major cost drivers – the number of students and the number of schools. It shows rapid subsidy growth, indicating a real increase in the average allocation per learner and school over time.

Figure 8: Growth in the PED subsidy transfer, in real terms, compared to the number of schools and enrolled learners



Source: National Treasury, 2022; Department of Basic Education, 2015–2021.

The growth in school fees (Figure 2) is not due to PEDs decreasing their subsidy funding relative to the number of schools and learners over time. In fact, the subsidy transferred per student has increased in real terms at an average rate of 2.4% per year since 2015.

An important caveat to this finding is set out in Section 3.2.3, where the appropriateness of using CPI to convert from nominal to real prices is discussed.

3.2.2 Progressive school funding

Redressing past inequalities and applying the ability-to-pay principle is central to South African public-school funding. The funding table in the introduction (Table 1) sits at the centre of this principle by providing poorer schools with more funding per learner. This redress is important, but it comes at a price. The more progressive the funding, the more fee-paying schools must rely on school fees to fill the gap between their budgets and their state allocation. This puts upward pressure on school fees when the gap widens between the per-learner allocation to quintiles 1 and 5 schools.

Since 2014, the quintile allocation per learner has remained at 17.3% of the allocation to quintiles 1, 2 and 3 schools.[14] Therefore, the real increase in the subsidy transfer shown in Figure 8 has been to the equal benefit of schools across the income quintiles. Neither the CPI-adjusted total amount of state subsidy funding nor its distribution among schools has been a driver of school fee inflation.

3.2.3 Cost pressure

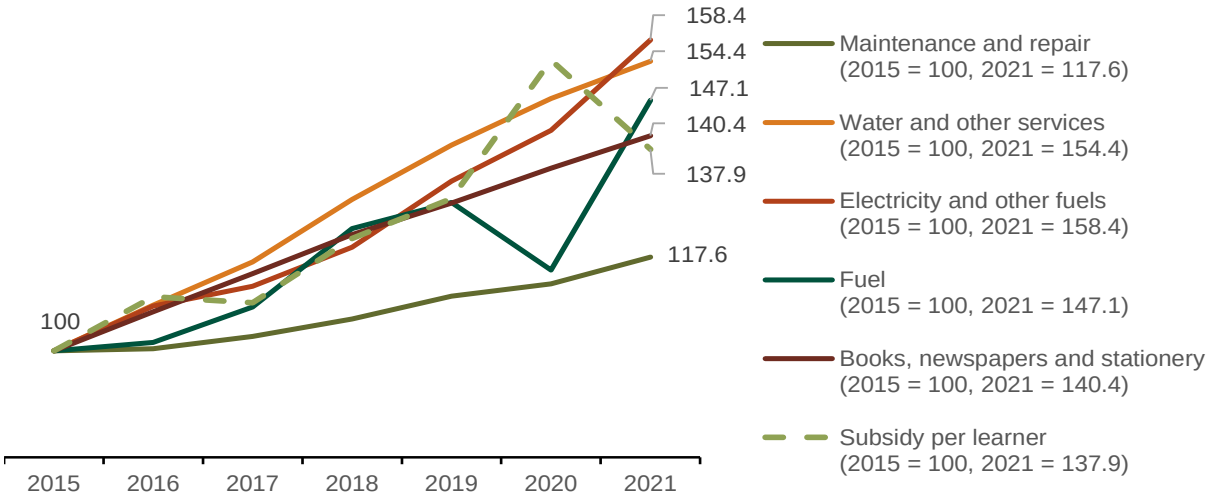
Sections 3.2.1 and 3.2.2 reviewed the subsidy allocation to schools meant for non-personnel recurrent spending. The review indicated a real increase in per-learner and per-school subsidy

[14] Department of Basic Education, 2014–2021.

spending over time. However, the conversion of nominal to real was done using overall CPI, which does not consider school-specific spending. Ideally such an index would be created for this analysis, but the data to determine the correct weights is unavailable. Nevertheless, the growth rates in the prices of the spending items known to be most significant in a school's budget can be compared. This comparison is presented in Figure 9. The selection of items was based on the most prominent school spending items according to the Amended National Norms and Standards for School Funding for which CPI data is collected.

Except for maintenance and repair, and a spike in 2020 in the subsidy per learner,[15] the prices of the spending items have consistently outpaced the subsidy. While the subsidy per learner increased by an average rate of 5.5% per year, Figure 9 shows that, between 2015 and 2021, water prices (tariffs) increased by 7.5%, electricity by 8%, fuel by 6.6%, and books and stationery by 5.8%.

Figure 9: Subsidy transfer per learner growth compared to price growth of most significant school spending items (2015–2021)



Source: Statistics South Africa, 2022.

Although these salient prices have not outpaced the subsidy by large margins, the differences are likely to be significant and are likely putting upward pressure on school budgets and fees.

3.3 Willingness and ability to pay

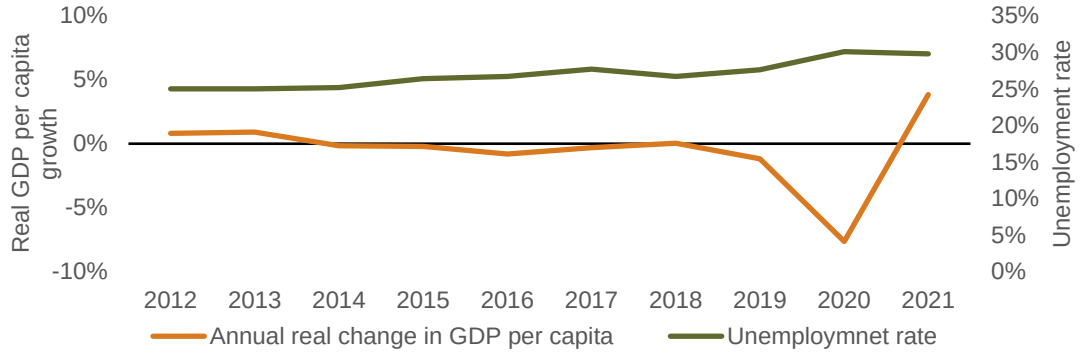
There are two types of school fee non-payments: those in arrears and those exempted through regulation. For the latter, SASA and its regulations allow parents with insufficient income to apply for an exemption. If the school fees payable is more than 10% of their income (combined, in the case of two caregivers), parents are fully exempted. If less than 10%, they can be partially exempted on a graded scale. In addition, orphaned learners and those benefiting from social grants are automatically exempted.[16]

15 Caused by a drop in enrolments, not an increase in the total subsidy.
16 Dass and Rinquest, 2017.

The prevalence of non-payment can be a significant driver of school fees. If the school's spending requirements remain the same while the pool of non-paying parents increases, the remaining fee-paying parents will have to pay more to make up the difference.

South Africa's economy has struggled to grow consistently and meaningfully over the last decade. Figure 10 shows a slow but steady upward trend in unemployment and a nearly constant negative growth in per capita GDP since 2014. Over the same period, the official unemployment rate increased from 24.8% in 2012 to 34.8% in 2021. In real per capita terms, South African GDP per capita is 5.7% lower than in 2012. Although the COVID-19 pandemic caused significant spikes in both measures in 2020, real per capita GDP in 2019 – before the pandemic – was already 1.7% lower than in 2012, and the unemployment rate was 2.6 percentage points higher.

Figure 10: South African performance since 2012 in terms of real per capita GDP and the unemployment rate



Source: Statistics South Africa, 2022.

The constrained economic environment has likely increased the number of learners that qualify for exemptions and the prevalence of unpaid school fees. Beyond the signals communicated in Figure 10, there is no specifically reliable and robust data that show actual increases in these phenomena. The one exception is possibly the 2020 School Fee Payment Monitor by TPN, a registered credit bureau servicing the education and property markets in South Africa. The monitor shows that, during the COVID-19 pandemic in 2020, the percentage of paid-up parents decreased from 61.5% in January 2020 to just 45.9% by August that same year. An important caveat to this data is that the source document, and, therefore, a description of its data collection approach, is unavailable online. Although this is during a very specific period in which the economy was struggling immensely, it may point to the relationship between economic performance, income and the ability of parents to stay up to date on school fees.

The significant deterioration in the South African economy during the COVID-19 pandemic and the subsequent slow recovery affected the space available for schools to increase fees. Schools are generally sensitive to parents' ability to pay under severely constrained economic circumstances. However, during the less severe economic constraints of the preceding years, school fees continued their rapid upward trajectory. When possible, schools will shift the burden of non-payment to paying parents for the sake of maintaining quality. But they are also

willing to contain spending, at the expense of quality, in times of severe and pervasive economic downturns.

Although the data required to prove it is unavailable, an argument can be made that an increasing proportion of non-payment among parents at fee-paying schools had likely led to some of the increases in school fees observed before 2019.

4. Summary and recommendations

The basic education funding model emphasises equity by allocating higher subsidies and more posts per learner to schools in poorer areas, prohibiting poorer schools from charging school fees and exempting poorer and orphaned learners.

Recognising that state funding may be insufficient, schools in national income quintiles 4 and 5 can charge school fees provided they do not place undue pressure on the South African consumer. However, although somewhat contained in 2021 – most likely due to external economic factors – school fees have mostly increased faster than CPI inflation. Over the past decade, school fee inflation exceeded CPI inflation by an average of 2.6 percentage points. Although primary and secondary tuition fees constitute just 1.57% of the CPI basket, it is significant. If the CPI and the school fee index were equal in 2011, by 2021, the school fee index would have been 22.8% higher than the CPI. Stabilising school fee inflation is essential.

Introducing competition is a common option for bringing down or stabilising prices, but this is not a viable option for public schools. In South Africa, catchment areas are allocated to prevent learners from having to go to schools far from their homes. These catchment area demarcations are essential from an equity and fairness perspective. They also automatically prevent competition. Nevertheless, there are other potential avenues for containing school fee inflation. The following recommendations are based on the analysis of the most significant drivers.

1. Ensure informed participation of parents in schools' fee-setting processes

The public school fee-setting mechanism in South Africa is essentially a negotiation between parents and the SGB. According to SASA, school fees are determined and charged only if a resolution (which includes the fee amount and the exemption rules) has been adopted by a majority of parents attending an annual general meeting where the school's budget and proposed fees are presented. Once adopted, the only recourse for parents is to appeal to the provincial department head to be fully or partially exempted. A few concerns are worth highlighting regarding this process:

- Are parents sufficiently informed of their influence on the fee-setting process?
- Are parents sufficiently informed of the steps available when they deem the fees unreasonable or unaffordable?
- Should parents be allowed to appeal the annual fee escalation and not just their exemption status?

- Is the voting at the annual general meeting done by secret ballot or are parents vulnerable to scrutiny by other parents?

These questions are avenues for future research. If the interactions between parents and the SGBs are found to be sub-optimal, it will be necessary to include policy stipulations that ensure parents are informed and capacitated to influence the annual fee-setting process.

2. Align wage agreements with organised labour and compensation of employee budgets at PEDs

Because the PEDs' compensation of employee budgets are fixed over a period, post-provisioning is adjusted downward when wage increases are higher than expected. The adjustment leads to fewer state-funded teachers relative to learners and more teachers employed by the SGB. The school-level spending increases on compensation of employees necessitate school fee increases.

To curb this dynamic, PEDs must be able to adjust their budgets according to wage agreements. If this is not possible, the required adjustment to the post-provisioning should be made clear to unions so that the necessary trade-off within a fixed budget is explicit in all negotiations.

3. Ensure a sufficient supply of entry-level teachers to replace retiring ones

One of the reasons for the increasing average wage is the ageing teacher population. However, since 2014, the average age has stabilised, indicating that entry-level teachers might be replacing retiring ones. This transition puts downward pressure on the compensation budget given that salaries differ based on years of experience. Research at Research on Socio-Economic Policy shows that a large wave of retirements is expected over the next 20 years. According to some estimates, this could lead to a natural decrease in the average teacher wage of about 15%.

This cost-saving is only realised if there are enough entry-level teachers available to replace the retiring ones. South Africa has to ensure an adequate supply of young teachers to prevent a situation in which teachers who should be retiring are contracted at much higher pay. The Funza Lushaka bursary programme has successfully increased the supply of young teachers. It is important that this programme and similar initiatives continue to receive funding and resources to take advantage of this demographic transition.

4. Develop an education sector-specific price index

The analysis in Section 3.2.1 showed that when adjusting for CPI inflation, the subsidy transferred to schools has increased relative to the number of learners. Although this is important, it disregards the fact that the schools' spending capacity may differ from the average consumers. Section 3.2.3 showed the extent to which a selection of spending items prominent to the average school had increased much faster than the average subsidy transferred per learner. Even though it may look like the subsidy transfer is proportionately increasing over time in real terms, when considering the actual spending composition of

schools, it may be telling the opposite story. A school-specific price index that considers the average amount that schools spend could serve two purposes:

- **Improve government budgeting:** The school-specific index could improve budget planning and analysis by replacing the CPI as the primary baseline guidance for funding growth.

- **Cap annual fee increases:** Schools could potentially be required to obtain permission to increase by more than the set upper limit. Importantly, such a measure should be considered with caution. Expecting schools to cap increases while state funding decreases in real terms would inevitably lead to undue declines in the quality of teaching.

5. Provincial-level analysis

Some of the dynamics observed in the data may differ among provinces. Although there is only a 70 basis point difference between the province with the highest and lowest education inflation between 2010 and 2022, the results may be driven by different factors. Comparing and contrasting the findings from the different provinces may provide deeper insight into the significance of each inflation-driving factor. It would also mean that the approach to stabilising inflation may differ by province.

It will be interesting to observe whether school fee inflation continues its pre-2020 trajectory in 2023. If parents' incomes improve significantly, schools may have the space to increase school fees again. They will be especially inclined to do so if state funding does not increase in a way that fully considers schools' most prominent spending items and sufficiently incorporates the negotiated wage agreements.

References

Dass, S and Rinquest, A. 2017. *The basic education rights handbook*, Chapter 7: School fees. Johannesburg: Section 27.

Department of Basic Education. 2003. Post distribution model for the allocation of educator posts to schools. Pretoria: Government of South Africa.

Department of Basic Education. 2006. Amended national norms and standards for school funding. Pretoria: Government of South Africa.

Department of Basic Education. 2014–2021. Amended national norms and standards for school funding. Pretoria: Government of South Africa.

Department of Basic Education. 2015–2021. School realities report. Pretoria: Government of South Africa.

Department of Basic Education. 2020. Action plan to 2024: towards the realisation of schooling 2030. Pretoria: Government of South Africa.

Gustafson, M and Maponya, T. 2020. 'Are South Africa's teachers among the best paid in the world? Using household assets as a proxy for monetary pay'. Stellenbosch Economic Working Papers, WP08/2020.

National Planning Commission. 2011. National Development Plan 2030: our future – make it work. Pretoria: Government of South Africa.

National Treasury. 2022. Estimates of national expenditure. Pretoria: Government of South Africa.

National Treasury, Department of Basic Education, KwaZulu-Natal Provincial Treasury, Western Cape Provincial Treasury. 2017. Generation and use of data in KwaZulu-Natal in the delivery of basic education. Pretoria: Government of South Africa.

Republic of South Africa. 1996. Constitution (103 of 1996). Cape Town: Government Gazette.

Republic of South Africa. 2011. South African Schools Act 84 of 1996. Pretoria: Government of South Africa.

Spaull, N, Lilenstein, A, and Carel, D. 2020. 'The race between teacher wages and the budget: the case of South Africa 2008–2018'. Stellenbosch: Research on Socioeconomic Policy, University of Stellenbosch.

Statistics South Africa. 2022. 'Gross domestic product, Quarter 2'. Pretoria: Government of South Africa.

Statistics South Africa. 2022. 'Monthly CPI index by product group'. Pretoria: Government of South Africa.

Statistics South Africa. 2022. Quarterly Labour Force Survey, Quarter 2. Pretoria: Government of South Africa.

Special OBEN 2301* – July 2023

Review of administered prices in South Africa: The electricity tariff

Zaakirah Ismail and Christopher Wood

Abstract

The current electricity pricing regime ties prices to Eskom's costs, with decades of mismanagement and crisis spending passed along to consumers. Despite this, efforts to contain costs risk undermining the capacity for reform at Eskom, by cutting off funding needed for key interventions like buying diesel. There is limited scope for reforming the electricity pricing regime to resolve this impasse – the trade-off is real and has no obvious resolution. Implementing reforms to the electricity market is likely the only route to truly resolving this impasse, but this is a very complex process that will take a long time to complete. There is clear scope for Eskom to improve efficiencies, but given the governance inertia and active resistance to change at Eskom, it is unlikely that this will be realised quickly. Improving municipal financing regimes, and strengthening measures to protect vulnerable consumers, could be one route to increasing prices while cushioning the inflationary impact.

1. Introduction

Electricity plays a significant role in a nation's growth and prosperity. It is a primary factor in assisting economic activity and facilitating economic opportunities that contribute to job creation and household income (Ledger 2022). Individuals and corporations need access to an affordable and reliable supply of electricity.

South Africa's energy system faces a dual crisis of rising costs and declining performance. Household electrical costs have risen by 60% since 2017, and the recently announced price increases for the 2023/24 financial year of 18.7% will maintain the pressure on consumers. Despite this, price increases have been inadequate to cover Eskom's growing financing needs. With declining electricity demand, a costly and debt-fuelled build programme and expensive short-term diesel usage, Eskom's needs appear increasingly unaffordable for South Africans facing the steepest general inflation in recent history.

Despite this, reforms to the regulated price of electricity offer little scope to contain prices in the absence of broader reforms to the electricity market. While there is scope to improve the underlying price-setting methodology, particularly by settling debates on the valuation of Eskom's assets and improving the performance of municipal tariff-setting processes, interventions have limited capacity to rein in prices driven by an unavoidable crisis at Eskom. Price setters remain stuck between a more price-reflective tariff and one that is affordable for South African households and industry.

*The views expressed in these Special Economic Notes are those of the author(s) and should not be attributed to the South African Reserve Bank or South African Reserve Bank policy. While every precaution is taken to ensure the accuracy of information, the South African Reserve Bank shall not be liable to any person for inaccurate information, omissions or opinions contained herein.

This paper explores opportunities to reform the electricity tariff and the limits thereof. It proceeds in three parts. Section 1 examines the current pricing methodology and recent price trends. Section 2 examines the five core drivers of electricity price inflation. And Section 3 examines options to reform the price-setting regime, including considering existing proposed reforms.

2. Pricing electricity

2.1 The Multi-Year Price Determination

The National Energy Regulator of South Africa (NERSA) regulates the electricity price per the Electricity Regulation Act 4 of 2006 and the National Energy Regulator Act 40 of 2004 (Department of Public Enterprises (DPE) 2019). Eskom makes a tariff application based on the Multi-Year Price Determination (MYPD) methodology, which bases prices on an allowable revenue (AR) that Eskom can earn to cover costs and expected energy sales for the period (DPE 2019). The following formula is used for the submission of the tariff application through the MYPD methodology:

$$AR = (RAB \times WACC) + E + PE + D + R\&D + IDM \pm SQI + L\&T \pm RCA$$

Investor return

Pass-through costs

Risk management

Where:

Input	Definition
AR	Allowable revenue
RAB	Regulated asset base
$WACC$	Weighted average cost of capital
E	Expenses (operating and maintenance costs)
PE	Primary energy costs (inclusive of non-Eskom generation)
D	Depreciation
$R\&D$	Research and development programmes/projects
IDM	Integrated demand management costs
SQI	Costs related to service quality incentives
$L\&T$	Government-imposed levies or taxes (not direct income taxes)
RCA	The balance in the Regulatory Clearing Account

Source: DPE (2019).

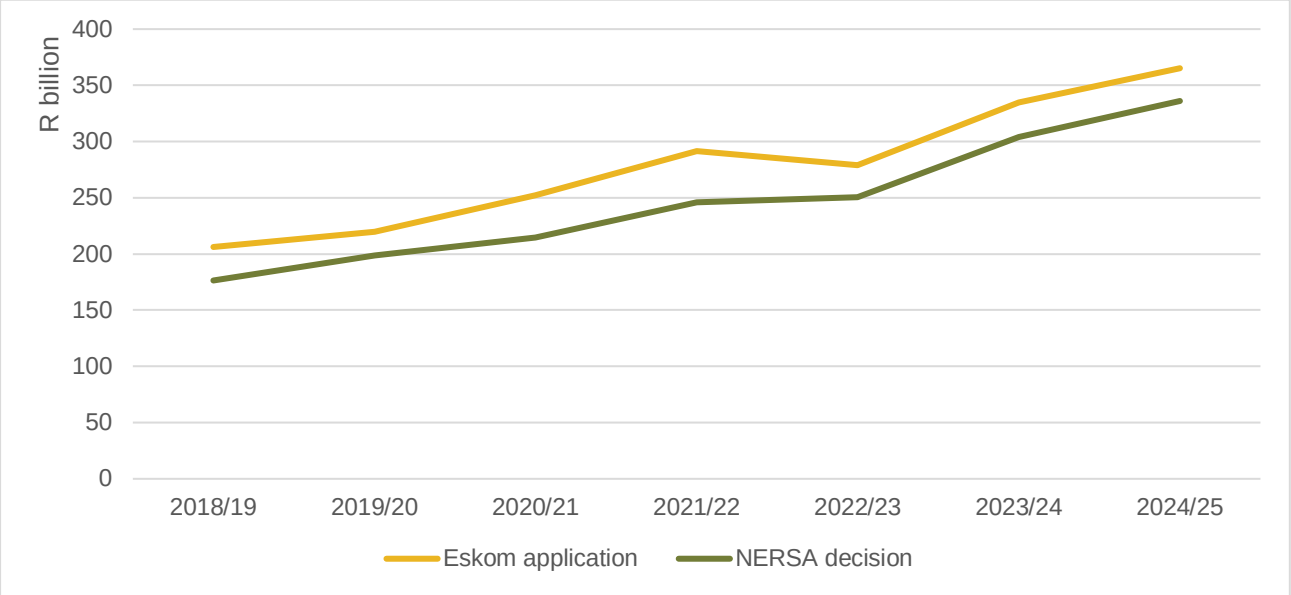
NERSA provides for Eskom's AR by forecasting its (efficiently and prudently) incurred costs plus a reasonable return. Select deviations from these forecasts, such as changing costs for energy generation or capital expenditure, are then captured in the Regulatory Clearing

Account (RCA). The RCA is effectively the difference between actual and forecast costs and is used to adjust the following year's tariff to account for these deviations.

Beyond the formula, NERSA must adhere to a range of additional requirements when deliberating over a tariff application (Eskom 2021). These include a range of considerations such as affordability, cross-subsidisation of different customer types and the impact of negotiated price agreements, which exempt certain users from the regulated tariff. While the MYPD methodology itself is relatively rigid, NERSA is not bound by its findings and can deviate from the methodology given "due consideration of what may be in the best interest of the overall South African economy and the public" (NERSA 2021).

A combination of these public good considerations and disagreements between Eskom and NERSA on key components of the AR, such as regulated asset base values, have generally led to price determinations that are substantially below those requested by Eskom.

Figure 1: Allowable revenue, Eskom application vs NERSA decision

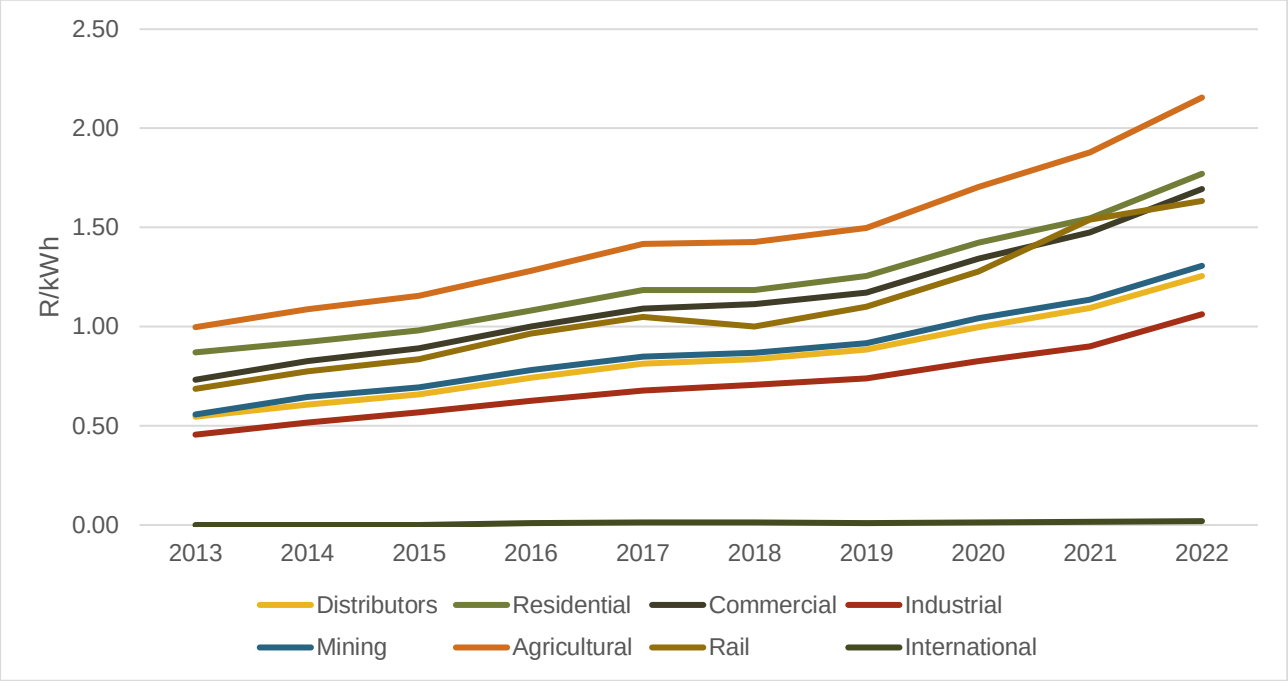


Source: NERSA tariff decision documents and Eskom MYPD applications.

2.2 Consumer pricing

While the price set by NERSA is the focus of this paper, it is not the final regulated price that most consumers will encounter. Final tariff rates will differ for residential, industrial and agricultural users; for usage at different times of the day and year; and for individual large consumers, like smelters, who are covered by an array of individual rate exemptions. The net result is that the real returns Eskom receives on the regulated tariff vary substantially between end users, as shown in Figure 2.

Figure 2: Eskom unit revenue per client type

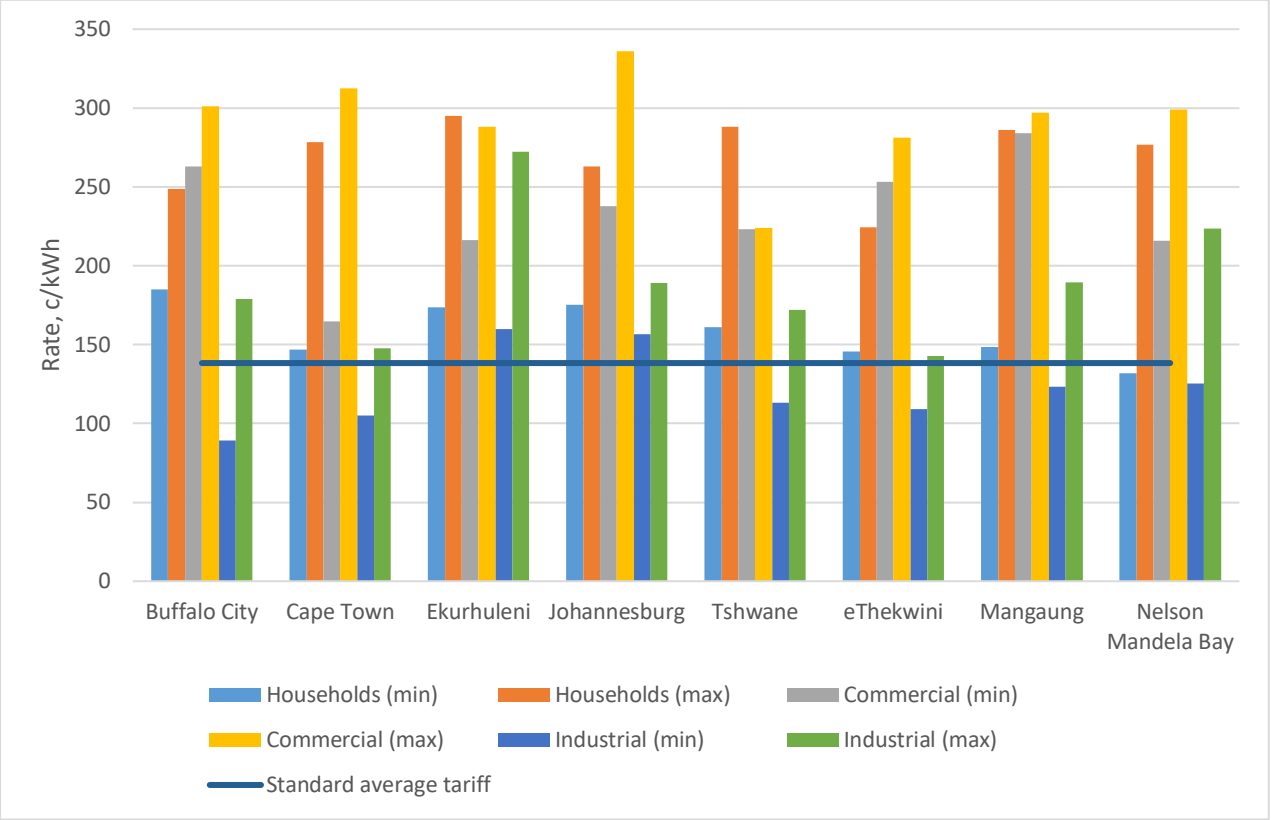


Source: Eskom annual reports.

Municipal rates, likely the most important for household inflation, are based on a similar assessment of the underlying costs facing distributors and must be approved by NERSA on an annual basis. NERSA publishes a guideline increase, but municipalities must still apply for their tariffs by providing justifications for their underlying costs.

However, there is substantial complexity in how final tariffs function; most utilities have complex schedules in which prices vary based on use, time, season, whether prepaid or conventional and the type of client. A wide range of fixed levies and demand charges supplement these basic usage tariffs. Figure 3 shows that standard (non-peak) tariffs for the major metros vary between tariffs that are 36% lower and tariffs that are 143% higher than the standard tariff set by NERSA.

Figure 3: Indicative metro electricity tariffs, 2022/23



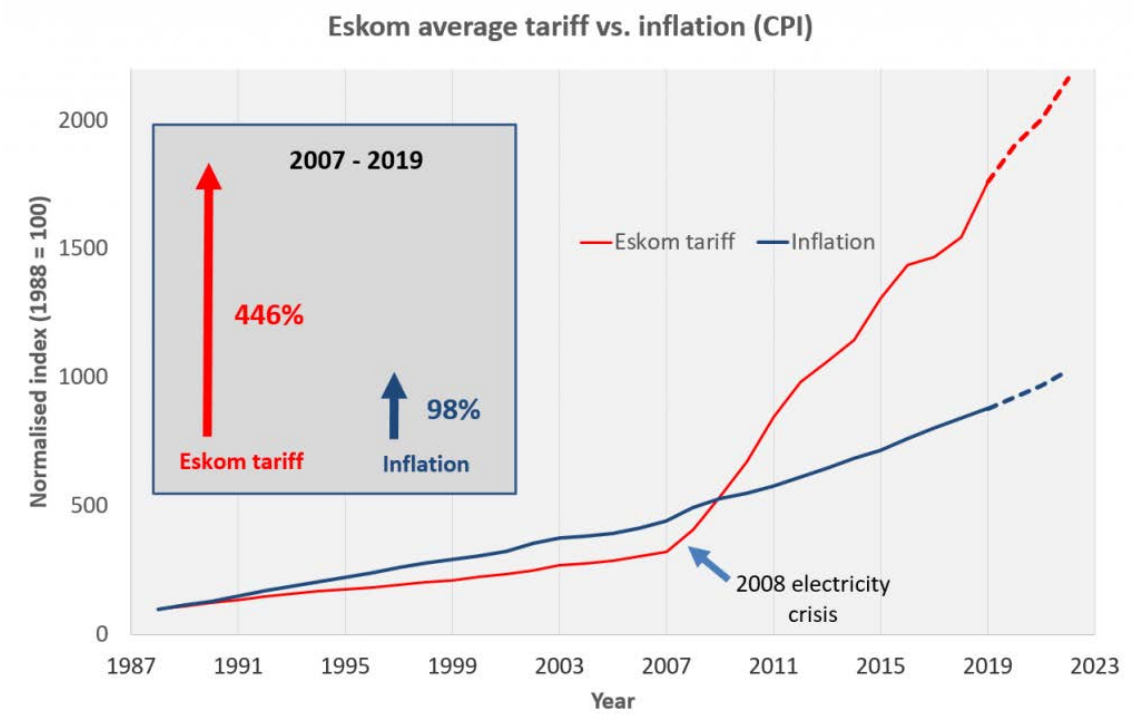
Source: NERSA, 'Approved municipal electrical tariffs 2022/22'. Minimum and maximum rates consider seasonal variation but do not account for time-use tariffs, with rates reflecting standard (rather than off- or peak) rates.

Municipal electricity utilities are envisaged as important players in managing energy affordability. They achieve this by cross-subsidising between households and large users, as well as by implementing social support such as the free basic electricity policy – although the performance and cost of these initiatives are very difficult to gauge because of a lack of transparent reporting. As discussed in Section 3.5, continuing pressure on municipal budgets has led to electricity sales increasingly being used as a source of basic revenue, potentially driving up prices.

2.3 Price trends

Figure 4 shows that most of the price increases in the tariff occurred after 2007, coinciding with the onset of the first wave of load-shedding. Between 2007 and 2017, the average Eskom tariff increased by 333%. By 2022, it had increased by 450% since 2007. Electricity price inflation has consistently exceeded headline inflation by a substantial margin, driving up the overall price level and impacting South Africa's price stability.

Figure 4: Evolution of average tariff in South Africa

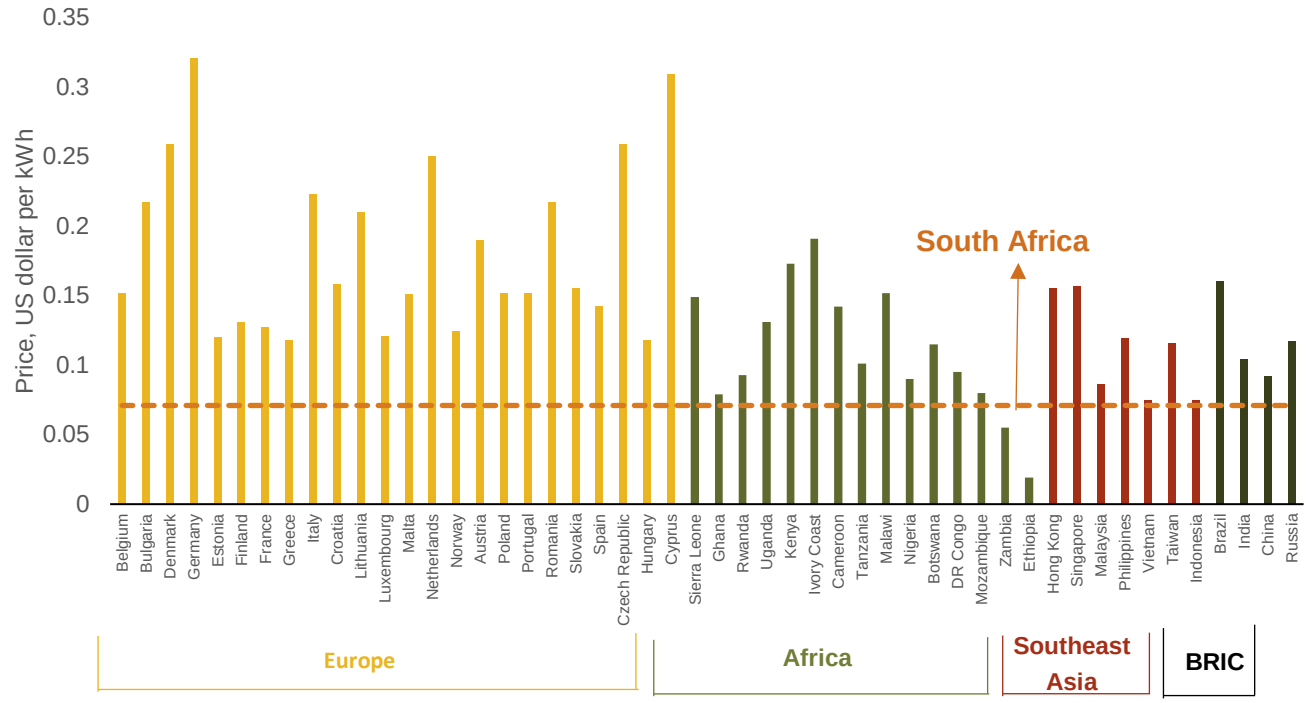


Source: Moolman (2021).

Despite the price escalation over the last 15 years, South African businesses still pay low tariffs compared to businesses in other countries (see Figure 5). The average price paid by South African businesses in 2021 was below all European, Southeast Asian and the BRIC[1] countries (Figure 5).

[1] Brazil, Russia, India and China.

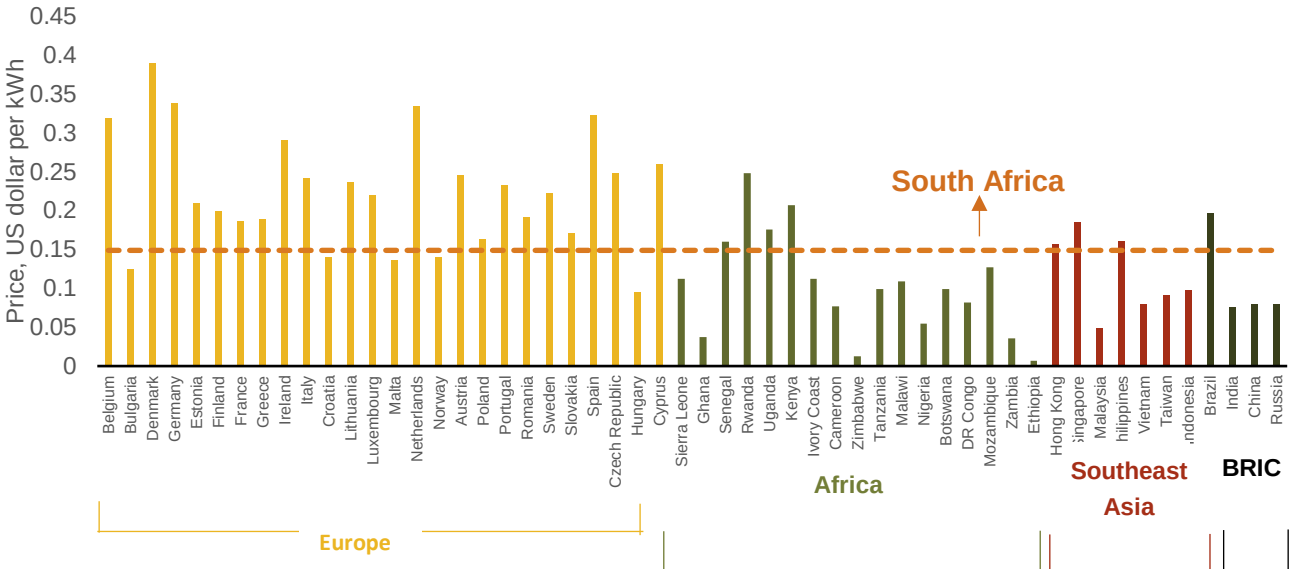
Figure 5: Electricity prices (businesses)



Source: GlobalPetrolPrices.com (2021).

While South Africa's current average electricity price ranks competitively across business segments, its residential consumers pay more than those in most African, Southeast Asian and BRIC countries. Compared to a list of 147 countries, South Africa's electricity price ranked 62nd highest, placing it above the midpoint of cheap and expensive markets (GlobalPetrolPrices.com 2021). South Africa's electricity prices are slightly above the emerging market average of US$0.11/kWh (Figure 6).

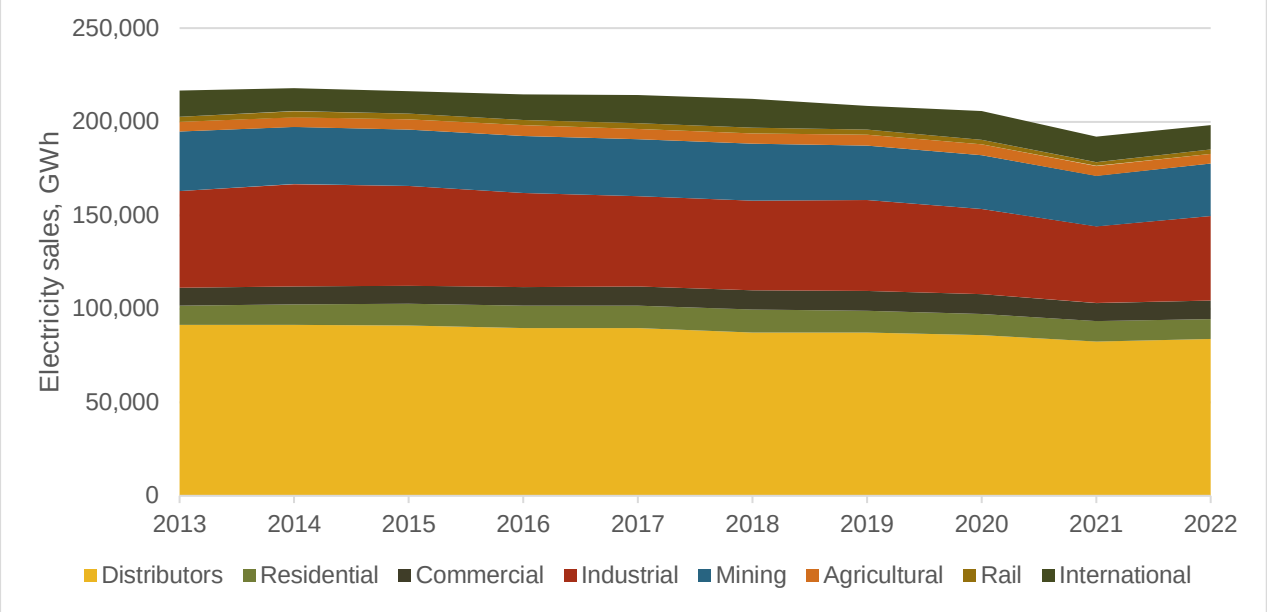
Figure 6: Electricity prices (households)



Source: GlobalPetrolPrices.com (2021).

Despite these higher prices, Eskom has not generated enough productive capacity to meet demand. With Eskom unable to supply sufficient electricity despite dwindling demand, a 'utility death spiral' is a real risk. This death spiral occurs when declining demand, and therefore, sales, means that tariffs need to increase to cover the costs of maintaining and expanding the grid, which in turn reduces demand even further as customers substitute alternative electricity sources or find themselves unable to pay. Over the past 10 years, Eskom's sales to distributors have fallen 8%, while industrial and mining sales have declined by 13% and 11%, respectively.

Figure 7: Eskom electricity sales, by client segment, GWh



Source: Eskom annual reports.

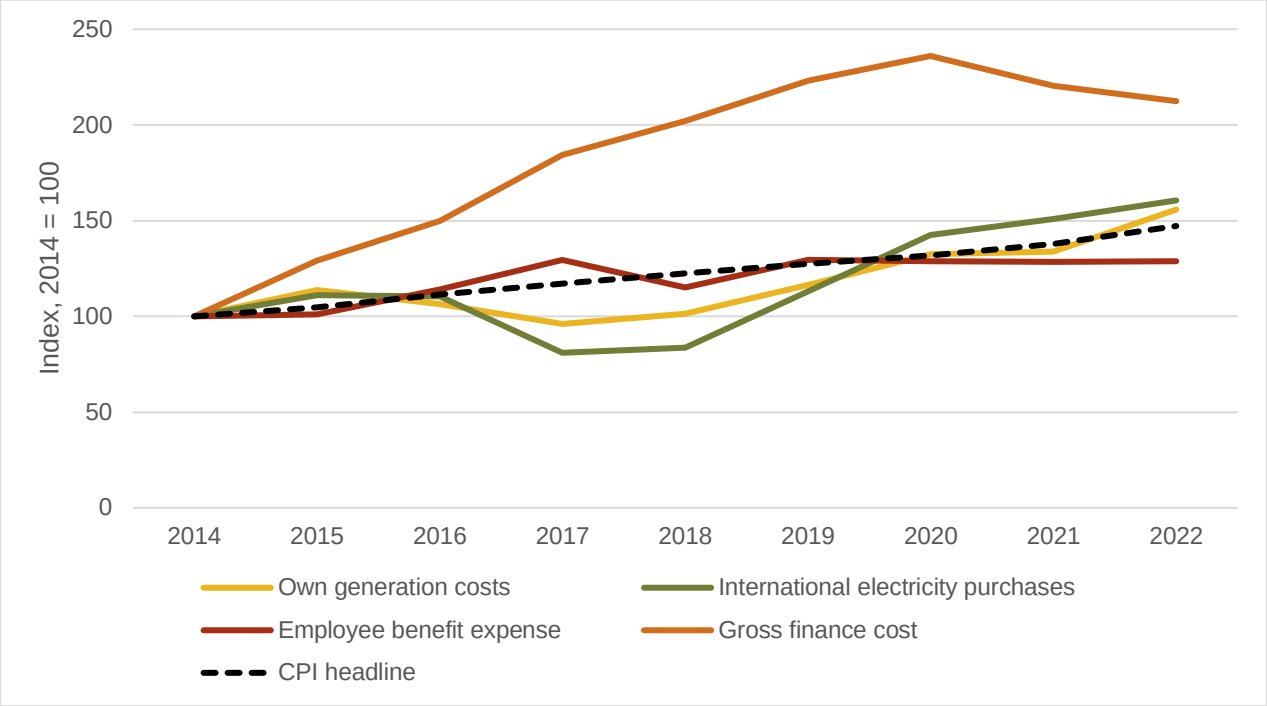
3. Key drivers of electricity prices

3.1 Capital expenditure

Between 2007 and 2021, Eskom spent R680 billion in capital expenditure, with generally poor results. Major projects during this time included the return to service of three end-of-life power stations, the development of two additional peaking plants and the construction of two very large new power stations, Medupi and Kusile. The latter two plants were particularly riddled with cost overruns and breakdowns and still require an additional R33 billion to complete.

Much of this new generation capacity was rolled out very quickly, with major governance challenges and a dearth of technical knowledge in a utility that had not built a new power station in 20 years. This resulted in very high costs and the development of a substantial debt burden for Eskom. By the end of 2022, Eskom's annual gross finance costs were R44 billion, exceeding employee costs (R33 billion) and equalling about half the value of the utility's own generation costs (R84 billion).

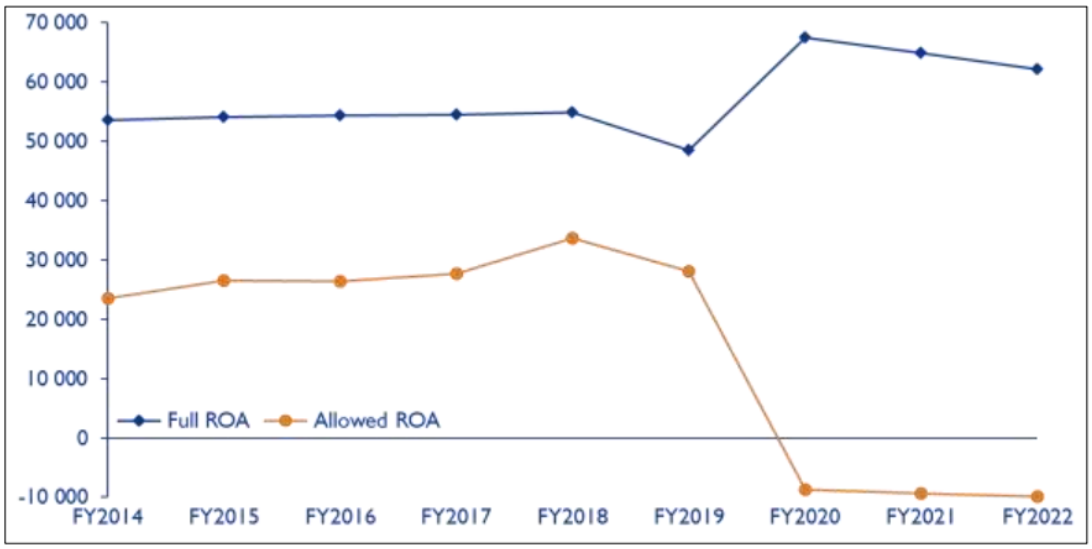
Figure 8: Index of Eskom's major cost drivers



Source: Eskom annual reports.

Eskom's capital expenditure and debt burden significantly impact the costs underlying the electricity tariff, and the methodology has limited scope to stop these costs from affecting consumers. Despite this, NERSA has consistently granted tariff increases that Eskom argues are below the level needed to make a suitable return on assets (ROA) (Eskom 2021).

Figure 9: Extent of under-recovery for the ROA



Source: Eskom (2021).

While a portion of this under-recovery results from NERSA exercising deliberate restraint in passing through the MYPD formula to strained consumers, Eskom has also argued that there is a major discrepancy between the asset values used by NERSA for regulatory tariff-setting

and newly acquired asset values, creating a funding shortfall when new assets are introduced (Eskom 2021).

Eskom reports that NERSA has determined a weighted average cost of capital of 7.1%, whereas Eskom's own determination of this metric is 11.5%, representing a shortfall of around R29 billion to meet Eskom's debt commitments (Eskom 2021). Much of this difference results from differences in valuations for Eskom's regulated asset base. In MYPD4, this largely resulted from three decisions by NERSA: write-downs of Eskom generation units that do not meet energy-availability factor targets, valued at R85.6 billion; the exclusion of the value of units that are not currently operational, which impacts units of Duvha, Hendrina, Komati and Grootvlei, valued at R16 billion; and a refusal to include additional spending on Medupi and Kusile, pending a full review of spending on the project.

Eskom's problem is compounded by a deterioration in its credit ratings. Worsening credit ratings since 2018 have affected Eskom's ability to borrow and to pay mounting debt-service costs (Eskom 2021). Despite promised support from National Treasury, in the absence of meaningful cost-saving measures, Eskom will have to continue increasing prices to cover its debt costs.

3.2 Declining sales

Eskom's ability to generate sufficient revenue plays an important role in the AR formula. Eskom must be able to generate sufficient revenues through sales to cover costs and reduce its reliance on debt (NERSA 2021). When NERSA considers Eskom's tariff application, it is based on a sales forecast. This forecast is crucial as NERSA guarantees a tariff based on it. When sales are lower than expected, Eskom's 'promised' revenue is also not recovered (NERSA 2021).

Table 1 shows that Eskom's largest sales losses have come from critical economic sectors. Since 2006, Eskom's sales have declined by an estimated 0.5% per year (NERSA 2021). Phalatse (2020) explains that total electricity sales declined after 2008 due to load-shedding and declining economic growth, exacerbated by economic shocks like the global financial crisis and the COVID-19 pandemic. This slowdown intensifies already declining demand for energy, which hit its peak in Q2 of 2007 due to (among other factors) a wide-ranging shift to energy-efficient technologies in response to the first wave of load-shedding.

Table 1: Eskom sales by sector (2013–2022)

Electricity sales per customer, '000 GWh	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Change in GWh sales, %
Distributors	91.4	91.3	91.1	89.6	89.7	87.1	87.2	86	82.4	83.9	-10.5%
Residential	10.4	11	11.6	11.9	11.9	12.3	11.7	11.3	10.9	10.5	4.10%
Commercial	9.5	9.6	9.6	10.2	10.3	10.5	10.6	10.5	9.7	9.9	4.6%
Industrial	51.7	54.7	53.5	50.2	48.3	47.9	48.7	45.6	40.9	45.1	-30.3%
Mining	31.6	30.7	30	30.6	30.6	30.2	29	28.7	27	28	-17.2%
Agricultural	5.2	5.2	5.4	5.7	5.4	5.7	5.8	5.8	5.5	5.4	6.3%
Rail	3	3.1	3.1	2.9	2.8	3.1	2.8	2.6	1.9	2.1	-40.9%
International	13.8	12.4	12	13.5	15.1	15.3	12.5	15.2	13.5	13.3	2.3%
Total	216.6	217.9	216.3	214.5	214.1	212.2	208.3	205.6	191.8	198.3	-14.7%

Source: NERSA (2021).

Declining sales volumes present a sustainability risk for Eskom and compounds the reliance on price increases as a source of revenue growth (NERSA 2021). National Treasury has urged Eskom to find effective ways to increase actual sales in its latest MYPD application (Eskom 2021). Despite this, Eskom's existing monopoly on energy supply means there is limited scope to restore sales volumes in the absence of greater underlying economic growth, particularly in the type of energy-intensive industries that are unlikely to invest in the face of steep electricity tariffs.

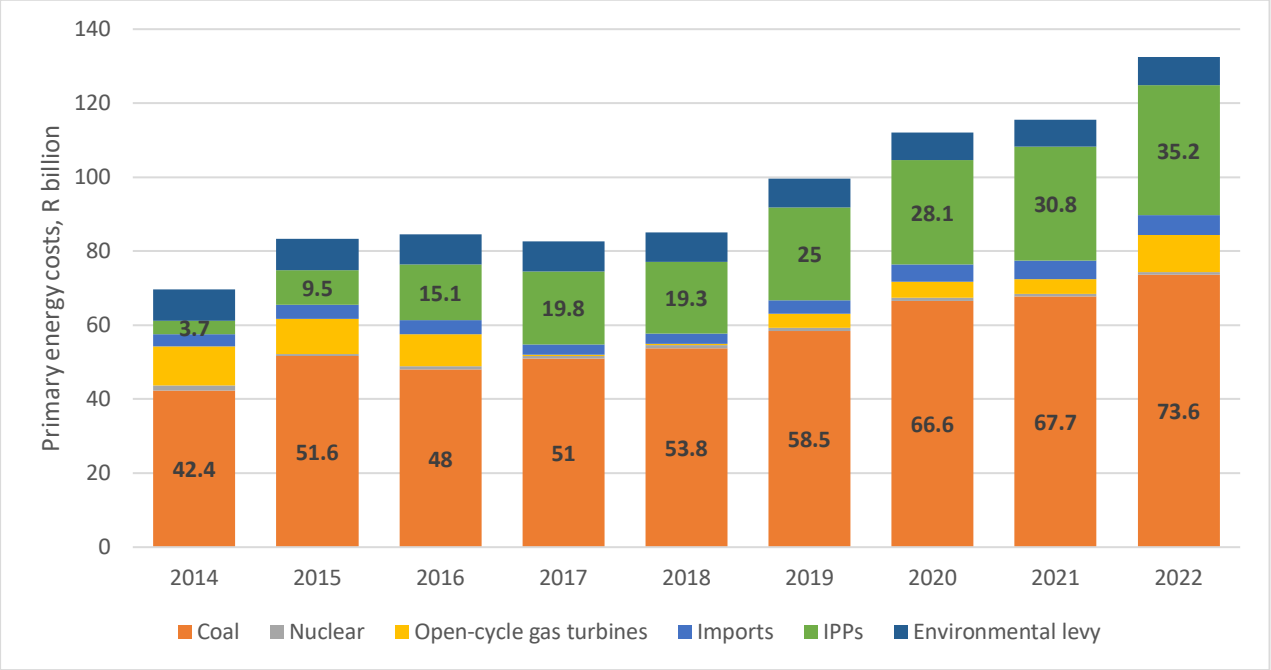
Variance in the rates charged to different categories of clients is also an underlying driver of declining sales (in rand terms), but a more complex one. For example, a set of special rates offered to major industrial users through negotiated pricing agreements means that, on average, earnings per unit of energy sold to industrial users are only 60% of that of a residential client. Despite this, these industrial clients traditionally play an important role in creating stable baseload demand for Eskom, and some would arguably be rendered uncompetitive by higher rates. A lack of transparency in these negotiated agreements, in which rates are typically redacted, makes it difficult to understand their impact on overall electricity prices.

3.3 Primary energy costs

While growing capital spending costs in the context of declining energy demand are the central driver of higher electricity tariffs, growing primary energy costs and operating expenses likely would have maintained pressure on the price even without the build programme. Eskom's recent tariff application showed primary energy costs of about R243 billion, levies and taxes of about R42 billion and operating expenditure of R105 billion (Eskom 2021).

Figure 10 shows an overview of growth in primary energy costs, which is primarily driven by three factors: declining efficiencies in coal production, increased use of diesel and the high prices associated with early-phase independent power producers.

Figure 10: Primary energy costs, by energy source



Source: Eskom annual reports.

Rising coal costs have been driven by the declining coal supply near Eskom's power stations, which means that coal must now be transported over a longer distance, thereby increasing costs. Nonetheless, volumes purchased have declined and may continue to do so over the medium term. Governance issues in coal procurement are also being addressed through the Eskom commercial process to reduce the risk of irregular expenditure.

Costs associated with open-cycle gas turbines tend to fluctuate along with failures in other generating capacity, as peaking infrastructure is repurposed to run near-constantly to make up for shortfalls. High diesel costs and exceptionally high downtime figures have contributed to costs in 2022, reaching a high last seen in 2014.

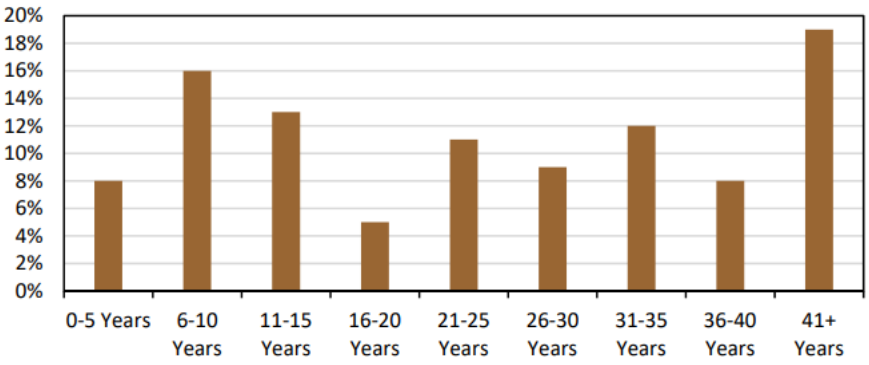
Despite the decrease in the cost of renewable technologies, the total cost of independent power production to the consumer has increased significantly due to higher prices being locked in during the first bid windows when the technology costs were still high. Prices were expected to decline after the incentive of these initial high prices and likely will decrease over the long term as new bid windows are awarded. However, shortages in key inputs to renewable energy (particularly semiconductors) and disruptions to the procurement programme have stunted these improvements and are expected to complicate the price path for renewable energy in the short term.

3.4 Operating costs

While operating costs have been a less important contributor to overall price pressures over the last 10 years – contributing 23% of Eskom's overall spending in 2022 – they may add price pressure in the future, as Eskom's operations shift to account for underlying failures in core infrastructure. Two operating expenses are particularly important: employment compensation and maintenance spending.

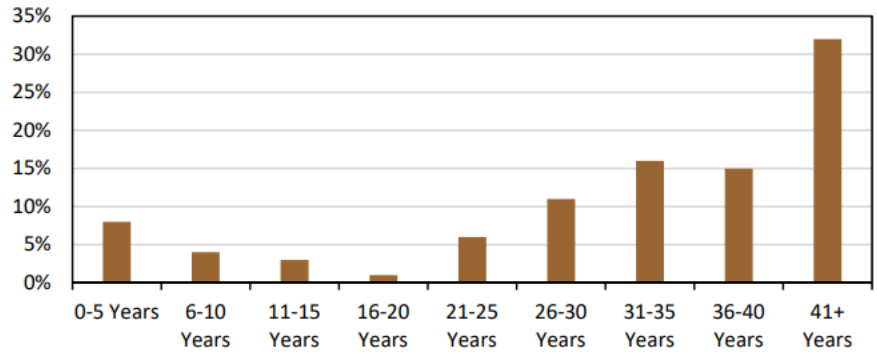
Maintenance costs reached an all-time high of R32.5 billion in 2022, driven by the increasing needs of an ageing fleet, the need to address serious design flaws in new build stations and an explicit policy by Eskom to increase maintenance hours in an attempt to reduce breakdowns. While much of the attention has been on maintaining generation infrastructure, Eskom notes that additional maintenance will be required for ageing distribution, transmission and generation infrastructure over the medium term and foresees costs going up gradually as part of a 10-year transmission refurbishment plan (Eskom 2021).

Figure 11: Age profile of transmission substation assets



Source: DPE (2019).

Figure 12: Age profile of transmission line assets



Source: DPE (2019).

Employment spending has consistently been identified as a potential cost-saving point for Eskom, driven in part by criticism of the cost and scale of employment by Eskom at a time of widespread failures in performance. A widely cited 2016 World Bank study found that South Africa's staff costs were higher than the norm in Africa, at 20% of operating expenditure against an average of 14%, and argued that Eskom was 66% overstaffed relative to a baseline of employee per client, mainly built on experiences in other energy markets.

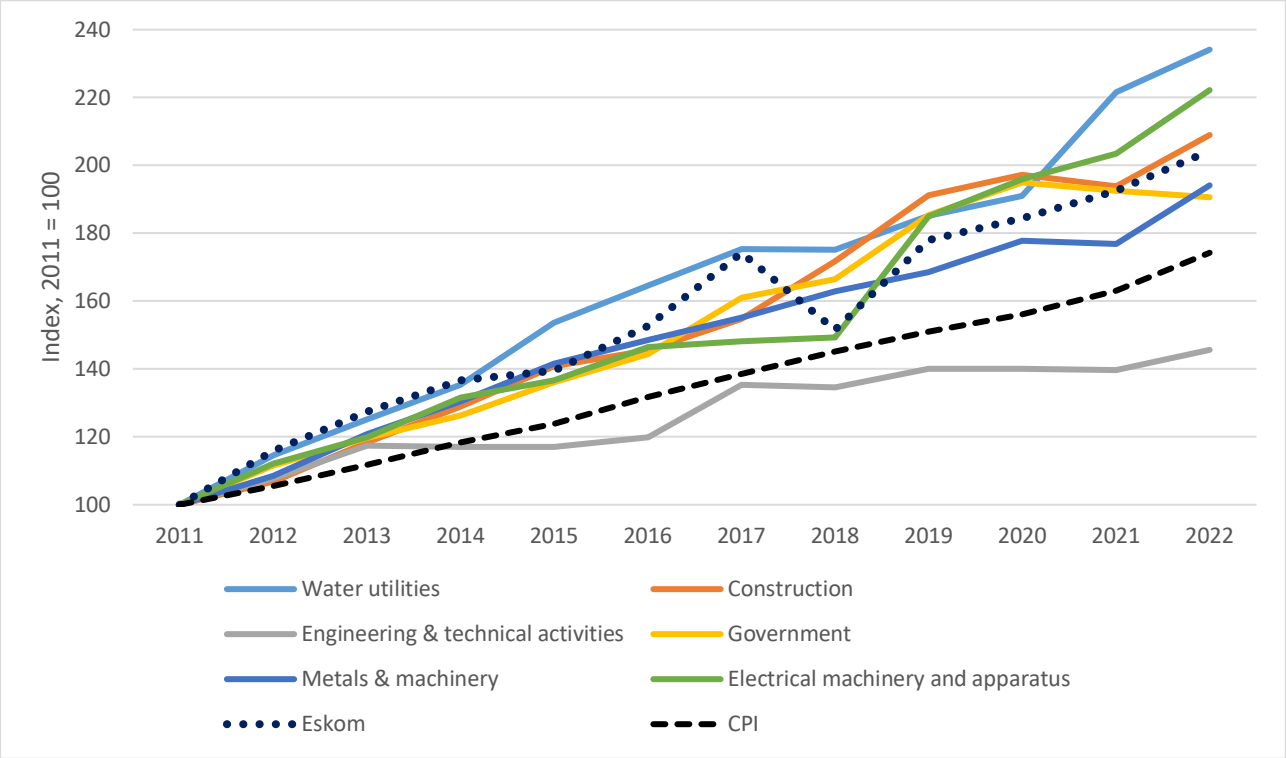
Eskom had 40 421 employees as of 2022 and has acknowledged its headcount is high and contributes to the need for a higher AR. However, in its recent tariff application, Eskom reports substantial progress in reducing its headcount since 2016/17, when the utility employed 47 987. The loss of employees during a period of large expansion is highly unusual but has relieved price pressure, with compensation costs increasing below inflation rates since 2014.

Over the next three years, overall operating costs are forecast to grow by around 5% per year (Eskom 2021).

However, there are risks to this forecast, as strike action and wage increases substantially above inflation could lead to significant deviations. In its latest wage negotiations, Eskom and union leaders reached a wage increase agreement of 7%, implemented across the board (Mkentane 2022). Unions argue that their demands are affordable as Eskom's wage bill has remained constant since 2017/18, and workers are struggling amid high living costs (Koka 2022). The settlement will add more than R1 billion to the overall wage bill between 2022 and 2023 (Mkentane 2022).

Despite this, Eskom's compensation has largely tracked industries with similar skill sets, such as electrical machinery manufacturing and construction, as shown in Figure 13.

Figure 13: Growth in Eskom staff costs per employee, against select industry averages



Source: Eskom annual reports; Stats SA Quarterly Employment Survey and CPI series.

While operating costs will remain a cause of price pressure, the net impact of these operational expenses on the electricity price will likely depend on whether they improve overall performance. Effective maintenance spending and strategic employment could help improve performance and reduce costs in areas like diesel spending. Ultimately, the quality of operations may prove more important than the extent of operating expenditure.

3.5 Municipal pricing

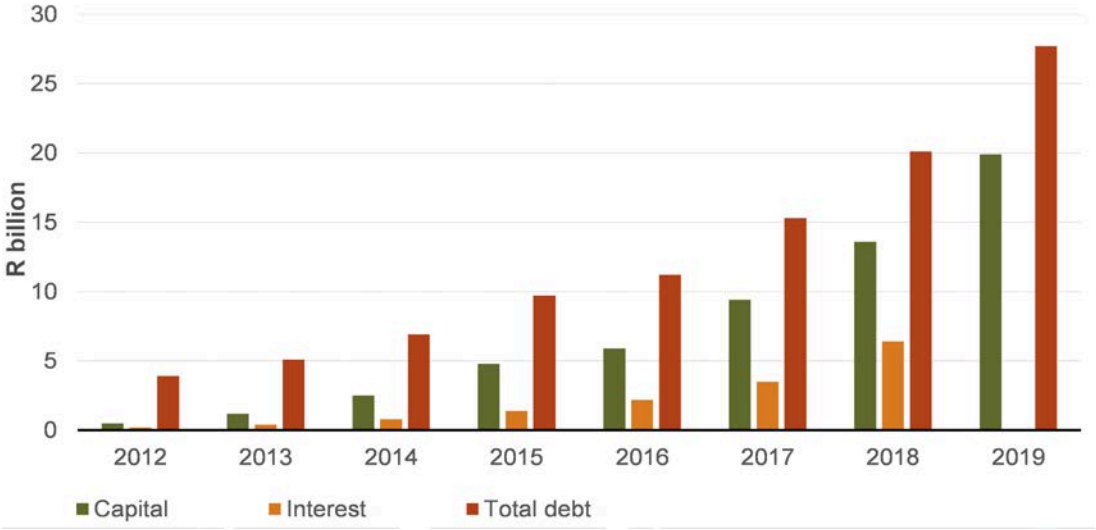
The margin received by distributors is an essential and complex component of electricity pricing, given that municipalities typically receive 25% to 30% of their revenue from electricity distribution (Ledger 2021). Given the extreme strain on municipal revenue, there may be

pressure for reductions in the regulated tariff from NERSA to be transferred to distributors, blunting potential price decreases if the regulated tariff is reformed without matching reform among distributors.

Higher electricity prices have also been attributed to municipalities' pricing policies and municipalities have been accused of 'profiting' unduly from electricity surcharges. Because the revenue is not ringfenced, revenues from electricity tariffs can be used by municipalities to subsidise other services (Stats SA 2022). Research done by PrimaResearch (2019) shows that between 2008 and 2018, the Eskom tariff increased by 14.4% as a compound annual growth rate. The research shows that due to the markup charged by municipalities on top of Eskom's increase, estimated excess profits to municipalities amounted to around R46 billion between 2008 and 2018. The excess was not evident for all municipalities, as there are signs that some municipalities partially absorbed the Eskom tariff increases.

From Eskom's perspective, municipalities pose a risk to its financial position, as shown by their growing debt to Eskom (total debt estimated at just below R30 billion, Figure 14). The top 20 defaulting municipalities constitute 82% of the total invoiced municipal arrear debt (Department of Mineral Resources and Energy 2019). Forty-seven municipalities owe more than R100 million each (Department of Mineral Resources and Energy 2019).

Figure 14: Rise in municipal debt



Source: Department of Mineral Resources and Energy (2019).

Addressing the issues related to municipalities is essential, given that they distribute electricity to key customer groups. So far, Eskom has exercised leniency towards defaulting municipalities. But the poor collection rate means that Eskom cannot service its debt load and will be forced to ask the government for more bailouts, increasing pressure on the fiscus. Eskom is currently enhancing measures to collect outstanding debt from municipalities while still providing electricity to them (Eskom 2021). If Eskom withholds electricity from defaulting municipalities, this will unduly affect consumers and disrupt productive activities.

On the other hand, the South African Local Government Association claims that Eskom's continuous tariff increases directly impact municipalities' financial performance (Eskom 2021),

as municipalities find themselves squeezed between rising bulk supply costs and consumers that are unable to afford higher tariffs. Between 2014 and 2021, the number of municipalities in financial distress more than doubled (Eskom 2021).

The risk is that municipalities may look towards cheaper alternative electricity sources to reduce operating costs (Eskom 2021). Furthermore, load-shedding has seen a growing number of high-income customers moving off the grid, compromising municipalities' ability to cross-subsidise to benefit low-income households (Eskom 2021). Ultimately, this dynamic could also feed into a utility death spiral, as defined in Section 2.3.

4. Scope for reform

4.1 Energy sector reform

In contrast to many administered prices in South Africa, there is very little scope to meaningfully reduce electricity prices through reforms to the price-setting regime without deeper restructuring in the energy sector. Price inflation stems from the fundamentals of the sector, including significantly rising costs at Eskom and the underlying limitations of an energy system dominated by a deeply troubled monopoly.

Meaningful changes in electricity pricing will likely only result from the broader reform currently under way in the sector – in which Eskom's generation, transmission and distribution components will be split into separate entities ahead of introducing competitive markets in each of these areas. This is, however, an enormous change that will likely take a long time to implement and will likely result in a market in which Eskom is still the largest player in the near term and retains the debt and governance challenges currently plaguing performance.

Therefore, reforms to the current pricing regime have a relatively narrow window of relevance and very limited conditions under which they can be introduced. Despite this, both NERSA and Eskom have proposed improvements to existing pricing regimes.

NERSA contends that the current methodology's key flaw is that it misprices costs based on averages (NERSA 2021). Across the electricity value chain, costs are averaged to determine the total revenue required by Eskom, which is used to set an average price (NERSA 2021). NERSA's proposed reform would provide separate tariffs for different activities (such as generation, transmission and distribution) and different technologies (such as renewable and coal energy). This effectively means that each generation facility would have its own rate and the final tariffs paid by consumers would depend on the specific mix of technologies that comprise supply to a given consumer and on the nature of the consumer's demand (for example, off-peak versus baseload).

This reform explicitly targets a post-reform energy sector in which individual generation capacity competes to be contracted. This is most evident in the margin pricing system, in which tariffs are also adjusted based on how much total energy is demanded – in effect, simulating a grid operator purchasing first from the most efficient supplier and then moving on to more costly options. The appropriateness of the entire system for the reformed market is difficult to judge, given uncertainties over what that new market will look like.

However, the proposal is a strange fit for Eskom in its current form. With Eskom's entire fleet operating at maximum available capacity more-or-less constantly, the new approach would likely result in an outcome similar to the current MYPD system, in which the tariff reflects total costs. The new system may introduce a more explicit logic to variance in tariffs between different types of consumers, based on the type of technology used to provide power, but this would appear in conflict with the existing objective of keeping prices affordable for customers.

The proposal may be appropriate once energy reform begins in earnest and may offer more complex changes once it moves beyond the initial concept phase, but as it stands, it appears to be a more complex means to return to the same cost basis as the current methodology.

4.2 Eskom's proposal

Eskom is also undergoing an approval process for restructuring tariffs motivated by the cost of supply, also known as the cost to serve. The following changes are proposed:

- **Increase municipal lighting tariffs:** The costs of generating electricity for public lighting are R62 million more than the revenue they collect. A new tariff of 30.28% is proposed.

- **Discard the inclining block tariffs structure:** Prices currently increase depending on blocks of total usage values for the month (analogous to marginal taxation brackets). The assumption on which this is based – that low-income or multi-family dwellings consume less electricity – is not necessarily true. In addition, there are more affluent customers, for example, with holiday homes, that unfairly benefit from this tariff structure.

- **Continue to subsidise low-income consumers through a new Homelight tariff:** Eskom would continue to subsidise costs for low-income users, who will pay roughly the same rates for lower energy usage, while consumption at or above 700kWh will be cheaper than under the current tariff structure. Conversely, high-income consumers will be charged more through a Homepower tariff.

- **Bill small-scale embedded generation:** Eskom proposes a new time-of-use tariff called Homeflex that could benefit photovoltaic users. It includes a net billing rate compensating for excess energy exported into the grid. Eskom says this tariff will be mandatory for customers with small-scale embedded generation and with the approved postpaid smart meter device and voluntary for residential customers without self-generation.

Electricity tariffs should reflect cost to serve and tariffs should be cost-reflective. The new proposed tariff structure aims to stay true to these principles. It is also expected to simplify tariff options by removing inclining block tariffs and rationalising municipal tariffs. If Eskom's new proposed tariff structure is implemented, consumers could see electricity price increases of more than 30% in 2023. However, the longer-term consequences of not charging cost-reflective tariffs are likely to be worse.

4.3 Affordability

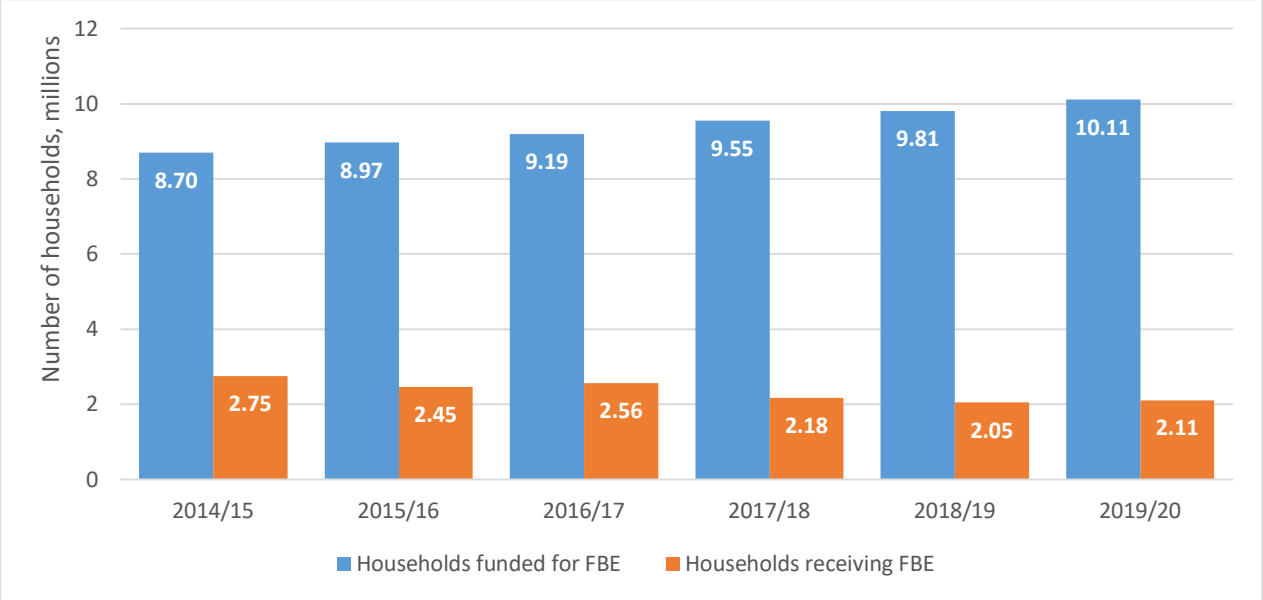
While there may be value in tweaking the methodology to calculate underlying costs better, the deeper problem of the current approach appears to be that it prioritises affordability with no explicit mechanism to do so or to account for the resultant cost gaps.

A World Bank study estimated that electricity prices are up to 81% under-priced (Eskom 2021). Artificially low electricity prices can have detrimental effects, including discouraging investment and, in the case of state-underwritten entities like Eskom, eventually burdening the fiscus. However, the regulated price is designed to be in tension with a monopoly demanding price increases that are detrimental to consumers. Given the trade-off between a failing utility and a struggling populace, the electricity price will almost certainly remain a compromise between the specifics of the MYPD and the test of affordability.

Despite this, affordability is not properly accounted for in any systematic way in the MYPD. Eskom claims that the most significant reason for the under-pricing is the absence of necessary benchmarking by NERSA. Addressing the economic impact parameters used by NERSA in determining price increases, Eskom commissioned independent research that argued that NERSA's approach to economic impact evaluations is methodologically flawed and fails to account for the counterfactual negative impact of inadequate tariff increases.

One approach that may offer a meaningful way forward is to improve the performance of affordability measures in municipal tariff rates. Cross-subsidisation strategies among distributors are meant to protect energy-intensive industries, while social support measures like free basic electricity (FBE) are meant to protect vulnerable households. However, performance is reportedly poor, with municipalities vastly underspending money allocated through the equitable share for free basic electricity, as shown in Figure 15.

Figure 15: Underspending in free basic electricity



Source: Ledger (2021).

While a full review of the performance of municipalities' price-setting strategies is beyond the scope of this paper, strengthening these existing affordability protections could offer scope for NERSA to raise national electricity tariffs with less severe social and economic trade-offs. However, with municipal finances heavily dependent on electricity revenues, the trade-offs in this process are almost as difficult as those for the core electricity tariff.

5. Conclusion

On balance, the current electricity environment is undergoing many changes, and substantial investment is required to ensure the stability of the electricity supply. These changes require price increases to ensure cost reflectivity and strong investor sentiment. Unfortunately, when it comes to electricity in South Africa, the choice is between short-term price stability with large-scale medium- to long-term price escalation and more contained (but significant and consistent) inflation over the short, medium and long term. Improving the efficiency and accuracy of the current price-setting mechanism will inevitably increase tariffs. Although improvements in municipal price setting may help cushion the impact of these increases, significant annual electricity price increases will be necessary for the foreseeable future unless direct support is provided to Eskom or broader reforms in the industry are fast-tracked.

References

BusinessTech. 2022. ‘Eskom workers to get another wage increase’. 30 September. https://businesstech.co.za/news/energy/629917/eskom-workers-to-get-another-wage-increase/.

Coetzee, C, Essaram, L, Gounden, P, Khoza, L and Zulu, S. 2011. ‘Administrative prices in South Africa – a threat to economic growth’. Working paper: KwaZulu-Natal Provincial Government Treasury Department.

Comins, L. 2021. ‘Eskom’s double-digit tariff request unaffordable for struggling consumers’. *The Mail & Guardian*, 5 September. https://mg.co.za/business/2021-09-05-eskoms-double-digit-tariff-request-unaffordable-for-struggling-consumers/.

Crompton, R, Sing, M, Filter, V and Msimango, N. 2020. ‘Petrol price regulation in South Africa: is it meeting its intended objectives?’ The United Nations University – World Institute for Development Economics Research (UNU-WIDER), Working Paper No. 2020/140.

Daily Investor. 2022. ‘We tracked Eskom’s electricity prices from 1950 and found a disturbing trend’. *MYBROADBAND*, 30 October. https://mybroadband.co.za/news/investing/466641-we-tracked-eskoms-electricity-prices-from-1950-and-found-a-disturbing-trend.html.

Daily Investor. 2022. ‘Eskom blew R680 billion and hired 18 000 staff and can’t keep the lights on’. *MYBROADBAND*, 29 October. https://mybroadband.co.za/news/investing/466613-eskom-blew-r680-billion-and-hired-18000-extra-staff-and-cant-keep-the-lights-on.html.

Department of Mineral Resources and Energy. 2019. *Integrated resource plan*. Pretoria.

DPE. 2019. *Roadmap for Eskom in a reformed electricity supply industry*. Pretoria: Department of Public Enterprises.

Eskom. 2021. *Multi-Year Price Determination (MYPD) 5 revenue application for FY2023–FY2025: submission to NERSA*.

GlobalPetrolPrices.com. 2021. ‘Electricity prices’. https://www.globalpetrolprices.com

Goode, R. 2020. ‘Municipal power procurement and generation’. Development Bank of Southern Africa, working paper WP/2020/01.

Greyling, D. 2022. ‘Rise and fall of Eskom’s workforce’. *Daily Investor*, 13 October. https://dailyinvestor.com/south-africa/4005/rise-and-fall-of-eskoms-workforce/.

Koka, M. 2022. ‘Striking Eskom workers say they cannot survive on their salaries’. *Sowetan Live*, 28 June: https://www.sowetanlive.co.za/news/south-africa/2022-06-28-striking-eskom-workers-say-they-cannot-survive-on-their-salaries/.

Labuschagne, H. 2022. 'Eskom proposes big changes for electricity tariffs in South Africa – including R938 fee for using 0kWh'. *MYBROADBAND*, 8 August. https://mybroadband.co.za/news/energy/455867-eskom-proposes-big-changes-for-electricity-tariffs-in-south-africa-including-r938-fee-for-using-0kwh.html.

Ledger, T. 2022. 'Universal access to electricity is a necessary prerequisite to ending poverty itself'. *Daily Maverick*, 16 February. https://www.dailymaverick.co.za/article/2022-02-16-universal-access-to-electricity-is-a-necessary-prerequisite-to-ending-poverty-itself/.

Mkentane, L. 2022. 'Eskom says unaffordable deal will add R1bn to wage bill'. *Business Day*, 5 July. https://www.businesslive.co.za/bd/national/2022-07-05-eskom-says-unaffordable-deal-will-add-r1bn-to-wage-bill/.

Mnguni, G, Amra, R and Mohamed, S. 2018. *Analysis of Eskom finances*. Cape Town: Parliamentary Budgetary Office.

Moneyweb. 2022. 'Nersa methodology for municipal electricity tariffs 'unlawful, invalid''. *Moneyweb*, 21 October. https://www.moneyweb.co.za/news/south-africa/nersa-methodology-for-municipal-electricity-tariffs-unlawful-invalid/.

Moolman, S. 2021. '2021 update: Eskom tariff increases vs inflation since 1988'. *Poweroptimal.com*, 1 August. https://poweroptimal.com/2021-update-eskom-tariff-increases-vs-inflation-since-1988/.

National Treasury. 2022. 'Financial position of public-sector institutions'. In *Budget review*. Pretoria: National Treasury: 92–96.

NERSA. 2021. *A consultation paper to determine a new price determination methodology*. Pretoria: NERSA.

Phalatse, S. 2020. 'Eskom: Historical background to its current crises'. Institute for Economic Justice, Working Paper Series, No. 4.

PrimaResearch. 2019. *Shedding light on Eskom*. Cape Town: PrimaResearch.

SARB. 2022. 'Monetary Policy Committee'. *resbank.co.za*, September. https://www.resbank.co.za/en/home/what-we-do/monetary-policy/monetary-policy-committee.

Stats SA. 2022. *Electricity generated and available: December 2022*. Pretoria: Statistics South Africa.

Steyn, G. 2003. *Administered prices: electricity*. Pretoria: National Treasury.

Wu, J and Wu, T. 2015. 'Goal 7 – ensure access to affordable, reliable, sustainable and modern energy for all'. *UN Chronicle*. https://www.un.org/en/chronicle/article/goal-7-ensure-access-affordable-reliable-sustainable-and-modern-energy-all.

Special OBEN 2301* – July 2023

Review of administered prices in South Africa: Municipal rates and taxes

Kim Walsh

Abstract

Growth in property rates revenues was well above inflation between 2016 and 2021. This seems to have been driven by growth in the market value of properties captured in municipal General Valuation Rolls and not by the cent in the rand property rate, which has increased by close to or below inflation. Cent in the rand property rates are seldom set based on analysis of the change in the cost of providing the services that they are intended to fund. Rather, rates are set within an overall budget process that considers what revenue increases are required from the budget and what rates increases are affordable to customers or politically acceptable to councils. This is an inherently political process. Factors that have driven increases in the costs of the publicly accessed services that are funded by property rates include slower growth in infrastructure grants; un(der)funded mandates and the expansion in standards for rates-funded services; declining electricity surpluses reducing the space for cross-subsidisation; high growth in employee-related costs; and high growth in debt impairment. Recommendations include (1) continuing to address issues of unfunded, underfunded or expanding municipal mandates through appropriate intergovernmental processes; (2) municipalities exercising caution in expanding service delivery standards or mandates in a constrained economic environment with significant affordability pressures on residents and businesses; (3) continuing to prioritise work on alternative revenue sources for municipalities; (4) providing urgent support to municipalities to contain employee-related costs; and (5) municipalities reintroducing debt collection and credit control measures, accompanied by careful indigent management.

1. Introduction

Municipal rates and taxes in South Africa refer exclusively to so-called property rates,[1] a cent in the rand rate levied on the market value of properties.[2] Property rates are taxes on wealth

[1] Property rates are a key element of local taxation in most developed and industrialised countries but are typically underutilised in developing and transition countries (Franzsen and McCluskey 2017). There is little data or literature available on property rates price increases in emerging markets, with most of the literature focusing on increasing the use of property taxes as an income source (see, for example, Ali et al. 2017; Granger 2019; and Moore and Monkam 2015).

[2] Clause 229(1)(a) of the Constitution of South Africa allows municipalities to impose rates on property. This is supported by clause 4(1) of the Municipal Systems Act 32 of 2000, which indicates that a municipality may finance its affairs out of a combination of fees on services and surcharges on these fees, rates on properties and "to the extent authorised by national legislation, other taxes, levies and duties". The Constitution states that these powers may not be exercised in a way that materially and unreasonably prejudices national economic policies, economic activities across municipal boundaries, or the national mobility of goods, services, capital or labour.

*The views expressed in these Special Economic Notes are those of the author(s) and should not be attributed to the South African Reserve Bank or South African Reserve Bank policy. While every precaution is taken to ensure the accuracy of information, the South African Reserve Bank shall not be liable to any person for inaccurate information, omissions or opinions contained herein.

and are generally regarded as progressive but can make up a significant portion of monthly bills for low-income households (Tshangana 2021). According to the South African Property Owners Association (SAPOA), rates and taxes made up 25% of operating costs for commercial properties in South Africa in June 2019 (SAPOA 2019). Increases in property rates can thus have a significant impact on the commercial property market.

This economic note will discuss current mechanisms for setting property rates in South Africa, consider key drivers of inflation in property rates and make recommendations for setting property rates in future. However, before doing that, the paper will comment on the complexity of determining what 'price' of property rates to compare and how property rates have changed over time in South Africa.[3]

1.1 What 'price' to compare?

Property rates are set annually by each of the country's eight metropolitan and 226 local municipalities. New property rates come into force on 1 July each year. The municipality sets a 'cent in the rand' rate, which is multiplied by the market value of immovable property to calculate a property rates bill. Cent in the rand rates differ for different categories of property. In the case of residential properties, an initial value is zero-rated and therefore deducted from the market value before applying the cent in the rand rate. Municipalities also offer additional exemptions, rebates and reductions to property rates to protect certain categories of property owners, including indigent owners and those dependent on pensions or social grants.

As a result, the property rates bill that a property owner receives may change from year to year due to:

- changes in the cent in the rand rate for the relevant property category;
- changes in the zero-rated property value for residential property owners or in other rebates or exemptions offered; or
- changes in the market value of property assumed as the basis for the property rates bill.

Values for similar properties may differ significantly from municipality to municipality, and property values increase differently in different municipalities.

The property values used to calculate property rate bills are held in a General Valuation Roll (GV). According to the Municipal Property Rates Act 6 of 2004, as amended, metropolitan municipalities must update their GVs every four years and local municipalities every five years.[4] Some municipalities choose to update their GVs more regularly.[5] The changes in property value shown in the previous paragraph will therefore be captured only periodically in

---

3 Palmer Development Group has written a paper on water prices for this series. Sections of that paper are duplicated in this one as many of the processes for setting property rates align with those for setting water tariffs, and several of the inflation drivers are the same.

4 Municipalities also produce Supplementary Valuation Rolls annually. These contain properties that were not included on the most recent GV or that have changed (this includes changes such as subdivision, consolidation or changes in category, as well as changes in market value due to a previous error or significant shifts in the market).

5 The City of Cape Town updated its roll every three years between 2006 and 2018 "to minimise the impact of changes in property values between valuation cycles" (City of Cape Town 2022).

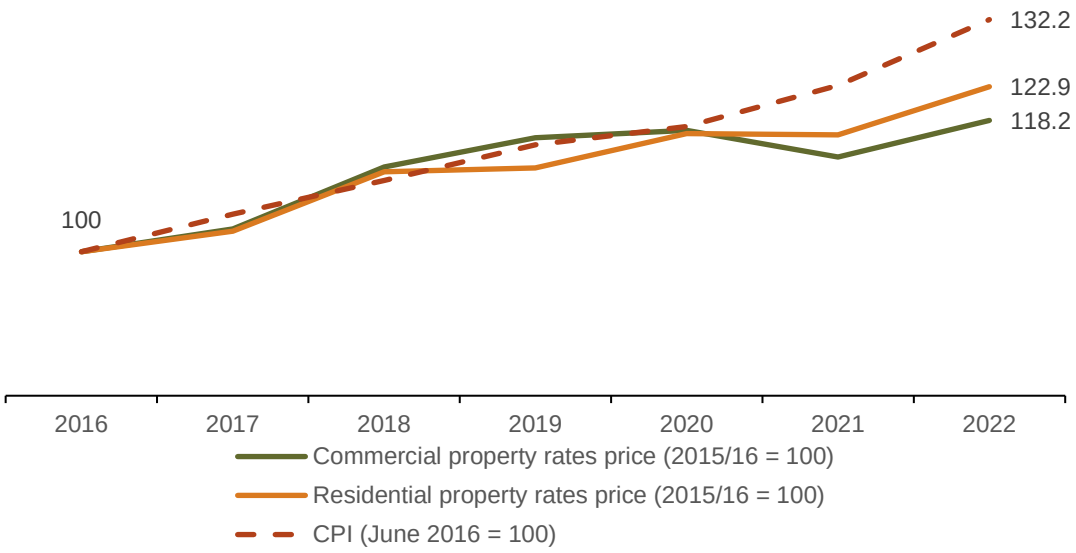
the GV. Property values typically change significantly upon introducing a new GV. Municipalities often 'buffer' the impact of a change in property values on the property rates bill by introducing lower increases in the cent in the rand rate in the year in which a new GV is introduced.

Therefore, when comparing the 'price' of property rates over time, it is ideal to assess the property rates bill for a specific property over time to capture the impact of changes in all three parameters identified in the bulleted list above. Looking at changes in the cent in the rand rate only presents part of the picture. However, this would require data on changes in the values of properties captured in the GVs of municipalities. Such data are not readily accessible and comprehensive analysis on changes in property rates bills over time is thus difficult.

1.2 What has the level of inflation in property rates been?

Statistics South Africa (Stats SA) includes 'assessment rates' in the basket of administered goods used to determine the consumer price index (CPI), but data on inflation in assessment rates as a specific item are unavailable (personal communication with Marietjie Bennet, Price Statistics Compilation, Stats SA). Figure 1 shows an index of the average cent in the rand residential and commercial property rate for seven of the eight metros[6] compared to CPI between 2016 and 2022.[7]

Figure 1: Growth in the average cent in the rand residential and commercial property rates for seven metros compared to CPI between 2016 and 2022



Source: Author's analysis of data from city tariff books and CPI reported by Stats SA.

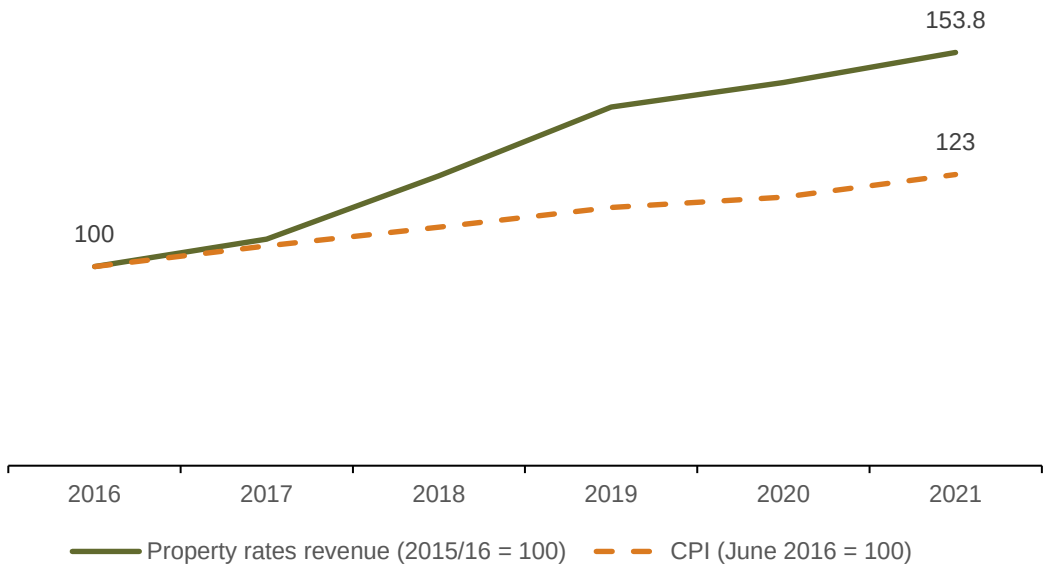
Figure 1 shows that the price increase in the cent in the rand property rate has been close to CPI over the period and dropped below CPI in 2021 and 2022. In contrast, Figure 2 shows

6 Nelson Mandela Bay was excluded due to unavailability of data in some years. Note that this is a simple average.

7 This is a simple average. The cent in the rand rates were averaged across the seven metros and this average was used to calculate the indices shown.

property rates revenues generated by the seven metros grew substantially ahead of inflation over the same period.

Figure 2: Growth in the property rates revenues in the seven metros compared to CPI between 2016 and 2021



Source: Author's analysis of National Treasury Local Government Database and CPI reported by Stats SA.

A portion of this growth may be due to increases in the number of properties in the metros, but most of the growth has been driven by increases in the market value of properties used to determine property rates bills. These market values, not the cent in the rand rate, drive any above-inflation growth in property rates bills and are typically the focus of complaints and objections to property rates appearing in the media.

While growth in property rates revenues has outstripped CPI, Ntiyiso Consulting (2017) reported that the growth in residential property values was 7.1% per annum on average between 2012 and 2017, higher than the 6.1% average annual growth in property rates revenues. In other words, municipalities are not capturing the full value of residential property growth through their rates.

Concerning commercial properties specifically, SAPOA produced a report in 2019 that indicated that rates and taxes for commercial properties had grown 8.6% per annum from 2000 to 2019. They indicate that the growth rate was CPI+3.6% from 2000 to 2005, CPI+4.8% from 2005 to 2014 and CPI+5.2% from 2014 to 2019 (SAPOA 2019). The report does not indicate the data source for this analysis, but one can assume it is based on actual rates bills by SAPOA members. In other words, the trend captures changes in both the cent in the rand rate and the market value of commercial properties in the GV. Given the data shown in Figure 1, which shows that cent in the rand rates on commercial properties grew at close to inflation in this period, the increase in rates bills reported by SAPOA must be due largely to increases in the assumed market value of commercial properties. The SAPOA report notes that this

makes property rates an increasing portion of commercial property incomes but does not comment on increases in rates and taxes relative to the value of commercial properties.

The Municipal Property Rates Act requires that property rates for non-residential property categories are set to a ratio for residential categories. If this ratio is kept fixed, then cent in the rand property rates will increase at equivalent rates for all property categories. If the ratio changes, then the rates for some property categories may increase more or less rapidly than others. Table 1 shows the ratios for commercial properties compared to residential for seven of the eight metros between 2016 and 2022.

Table 1: Ratio of the cent in the rand rate levied on commercial properties relative to residential properties in seven metros between 2016 and 2022

	2016	2017	2018	2019	2020	2021	2022
Johannesburg	2.80	2.60	2.60	2.60	2.60	2.50	2.50
Cape Town	2.00	2.00	2.00	2.00	2.00	2.00	2.00
eThekwini	2.27	2.27	2.27	2.27	2.27	2.27	2.27
Ekurhuleni	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Tshwane	3.02	3.02	3.02	2.94	2.94	2.50	2.50
Buffalo City	2.50	2.50	2.50	2.50	2.50	2.50	2.50
Mangaung	4.08	4.12	4.12	5.03	4.11	4.11	3.87

Source: Author's analysis of municipal property rates policies or budget documentation.

Four of the seven metros kept the ratios fixed. Johannesburg and Tshwane have brought their ratios down steadily since 2016, which would result in lower increases in the commercial cent in the rand rate compared to residential. Mangaung increased the ratio from 2016 to 2019 but brought it down again in recent years. Regarding rebates and exemptions, it is notable that several metropolitans increased the value of properties that are zero-rated over the past five years, in some cases by a significant margin.

Table 2: Rand value of residential properties on which no rates are levied in each metro in 2016/17 and 2020/21

	2016/17	2020/21
Johannesburg	200 000	350 000
Cape Town	200 000	300 000
eThekwini	120 000	120 000
Ekurhuleni	150 000	150 000
Tshwane	75 000	150 000
Nelson Mandela Bay	15 000	15 000
Buffalo City	15 000	15 000
Mangaung	70 000	80 000

Source: Author's analysis of municipal property rates policies or budget documentation.

The Municipal Property Rates Act requires that at least R15 000 be zero-rated. Most metros zero rate a significantly larger portion of the property value. Johannesburg, Cape Town and

Tshwane increased their zero-rated portion significantly between 2016/17 and 2020/21. Increases in the zero-rated portion reduce the rate of growth in the property rates bill for residential customers and offset increases in property values to some extent.

In sum, the level of inflation in property rates bills is uncertain, but the growth in property rates revenues suggests that it has been well above inflation. Above-inflation growth has been driven by the market value of properties captured in municipal GVs, not by the cent in the rand rate, which has increased by close to or below inflation. For many metros, expansion of the zero-rated property value has placed downward pressure on property rates bills.

2. The current price-setting mechanism

As noted in Section 1.1, three separate factors determine the increase in the property rates bill: the cent in the rand rate, the rebates or exemptions offered (including the zero-rated residential property value), and the market value of property assumed in the GV. The cent in the rand rate and zero-rated property values are set through the budget process, while the market value of properties is determined through the periodic valuations process. These will be discussed separately below.

2.1 Setting the cent in the rand rate, rebates and exemptions

The setting of the cent in the rand rate and determination of the size of rebates and exemptions is part of the overall annual municipal budget process. Rates are set to achieve revenue targets required to ensure an overall funded budget for all municipal functions combined.

In research conducted by National Treasury on tariff-setting processes in the North West and Gauteng provinces, it was found that no municipality used a tool or model to set tariffs (National Treasury 2019). A relatively small number of municipalities undertook analysis to inform tariff setting, looking at growth in anticipated cost drivers or benchmarking with other municipalities. Most municipalities, however, simply adjusted tariffs by inflation only. While this research did not cover property rates specifically, similar findings likely hold for setting property rates in these municipalities.

The key point is that setting the cent in the rand property rate is seldom based on analysis of the change in the cost of providing the services it is intended to fund. Rather, rates are set within an overall budget process that considers what revenue increases are required from the budget and what rates increases are affordable to customers or politically acceptable to councils. This is an inherently political process.

The second key point is that annual increases have little or no regulation. Section 19 of the Municipal Property Rates Act allows the Minister of Cooperative Governance and Traditional Affairs (CoGTA) to set upper limits for the ratio between the rates levied on residential and non-residential property categories. Section 20 allows them to set an upper limit on the percentage increase in the rate or property rates revenues. Draft regulations on both were published in 2007. Regulations related to the ratios were gazetted in 2009, referring only to the agricultural and public service infrastructure property categories. Regulations related to

upper limits on the percentage increases were not gazetted.[8] There is no process for reviewing or commenting on the property rates increases that each of the eight metros and 226 local municipalities proposes for each year.

2.2 Determining the market value of properties

The value of properties to be used in calculating property rates bills is held in a municipality's GV. These values are determined through a valuations process that must be undertaken by a municipal valuer internal to the municipality or by an external service provider.[9]

The key concern related to the valuation process is its periodic nature (four to five years), meaning that property values can change dramatically upon introducing a new valuation roll.[10] As noted in Section 1.1, municipalities often 'buffer' the impact of a change in property values on the property rates bill by introducing lower increases in the cent in the rand rate in the year in which a new GV is introduced. Municipal officials, however, note that lead times in preparing valuation rolls can be very long and that it is therefore difficult to prepare a GV more regularly (National Treasury 2018). Municipalities could, however, use supplementary valuations as indicators of changes in property values between GVs, and try to set the cent in the rand rates in a way that smooths the impact of a new GV on rates bills.

Some municipalities express concerns that municipal supply chains cannot assess the professional merits of valuers and that appointed valuers, therefore, do not always have the necessary skill and experience. Some municipal officials lack adequate understanding of the Municipal Property Rates Act. Section 81 of the Act requires provinces to monitor compliance with its provisions. Provincial monitoring is often not undertaken (National Treasury 2018) and in some municipalities there is no auditing of the valuation roll.

3. Inflation drivers

A theoretically sound process for setting property rates would include the following steps:

8 Note that property rates are an important general revenue source for municipalities, and it is considered appropriate that they have a high degree of discretion in setting these rates. The draft regulations published in 2007 were strongly criticised by local government as being irrational and unduly restrictive (Steytler 2008).

9 The Municipal Property Rates Act specifies that municipal valuers must be registered as professional valuers or professional associated valuers in terms of the Property Valuers Profession Act 47 of 2000. The South African Council sets standards for valuations for the Property Valuations Profession (SACPVP) in accordance with policy and guidance from the International Association of Assessing Officers. Valuations can be determined individually or via a mass evaluation method, with the latter referring to the use of a model based on the relationship between value and variables representing factors of supply and demand (SACPVP 2021). Valuations may be prepared on a sales, income or cost basis, with the latter two applied for non-residential properties. Physical assessments are undertaken at least periodically for a sample of properties; these are done via physical inspection or pictometry (aerial images taken from multiple angles). Mass valuations are necessary as, in most municipalities, it is impossible to value each property individually. However, they may result in some unjustified variances in the values of individual properties where the assumed supply and demand factors do not hold. Municipalities have processes that allow for objections to proposed market values in the GV, representing an important check and balance on the valuations process.

10 There are processes in place for objecting to the market property value in the valuation roll.

- determine the cost of supply of the services to be funded through property rates, including both direct and indirect costs;[11]
- allow for surpluses or deficits;[12]
- allocate subsidies and other revenues to determine the revenue required;[13] and
- apply tariff structures to generate the revenue required.

Under such a process, the drivers of inflation in property rates would be:

1. Increases in the key expenditures associated with the rates-funded services.
2. Changes in the quantum of grants and subsidies received.
3. The amount allocated to rates-funded services.

However, as noted in the previous section, the actual impact of these inflation drivers on property rates is sometimes delinked through the tariff-setting process, with increases ultimately coming down to perceptions of affordability. The next section will nonetheless discuss some trends in key inputs to a theoretical rate-setting process that may be driving the inflation of property rates in at least some municipalities, including metros.

3.1 State funding through grants

It may seem contradictory to think of trends in state funding through grants as an 'inflation driver' for property rates, but if the growth in state funding is lower than the growth in costs, then the quantum of revenue that must be generated through rates will be higher, driving greater increases in rates. Figure 3 shows that the Local Government Equitable Share (LGES) allocations to all municipalities have increased at a rate well above inflation over the past 10 years.

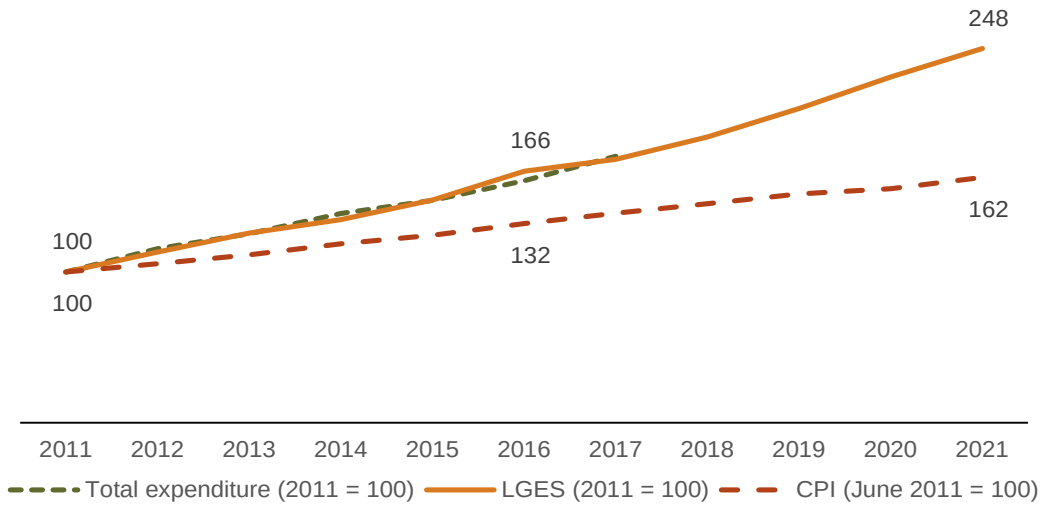
---

11 Property rates are the main funding source for services that are publicly accessed, which include community and social services, sports and recreation, public safety, municipal housing, municipal health, planning and development, roads and public transport, and environmental protection. 'Indirect costs' refers to a portion of municipal overheads (budget and finance department, human resources, information technology, etc.) allocated to these services. The supply cost should also include a provision for capital expenditure sufficient to allow for necessary expansions to infrastructure and the management of existing assets.

12 Current practice in municipalities includes a high degree of cross-subsidisation between services and customer groups. Historically, the electricity service has operated at a significant surplus in most municipalities, which has been used to cross-subsidise the provision of other services. In most municipalities, property rates revenues do not cover the cost of providing rates-funded services, and electricity surpluses have been significant in making up the deficit.

13 The Local Government Equitable Share (LGES) is a substantial, unconditional grant provided to municipalities annually through the Division of Revenue Act. While unconditional, it is intended to subsidise the provision of basic services to the poor. Because it is unconditional, municipalities can allocate it between functions as they see fit. The quantum of LGES received by the municipality and the quantum that they choose to allocate to rates-funded services significantly influence the amount of revenue that must be generated through rates. However, allocating more LGES to rates-funded services means allocating less to other services, which places upward pressure on the tariffs for these other services. Municipalities also receive a range of conditional grants, largely for capital expenditure.

Figure 3: Growth in LGES allocations to all municipalities combined compared to growth in CPI and growth in total municipal operating expenditure between 2011 and 2021[14]



Source: Author's analysis of municipal expenditure data from National Treasury's Municipal Budget Reporting Reform A2 tables for all municipalities combined for 2015, 2018 and 2021 Medium Term Revenue and Expenditure Frameworks; LGES data from the Division of Revenue Acts for the relevant years; CPI year-on-year for June each year as reported by Stats SA.

It is also notable that growth in total operating expenditure by municipalities has tracked LGES growth almost exactly. The close tracking of expenditure with LGES allocations indicates that the portion of expenditures covered by the subsidy has remained largely fixed over the period, and declining LGES allocations have, therefore, not been an inflation driver for rates and tariffs over the past 10 years.

Municipalities often indicate that the number of poor households to whom they must provide subsidised services has grown and that subsidy allocations are increasingly inadequate to cover the costs. There is, however, no data to determine the accuracy of this assertion.[15] While growth in the number of households subsidised is uncertain, there has been upward pressure on the level of subsidy required through the zero-rated portion of the residential property value, as noted in Section 1.2.

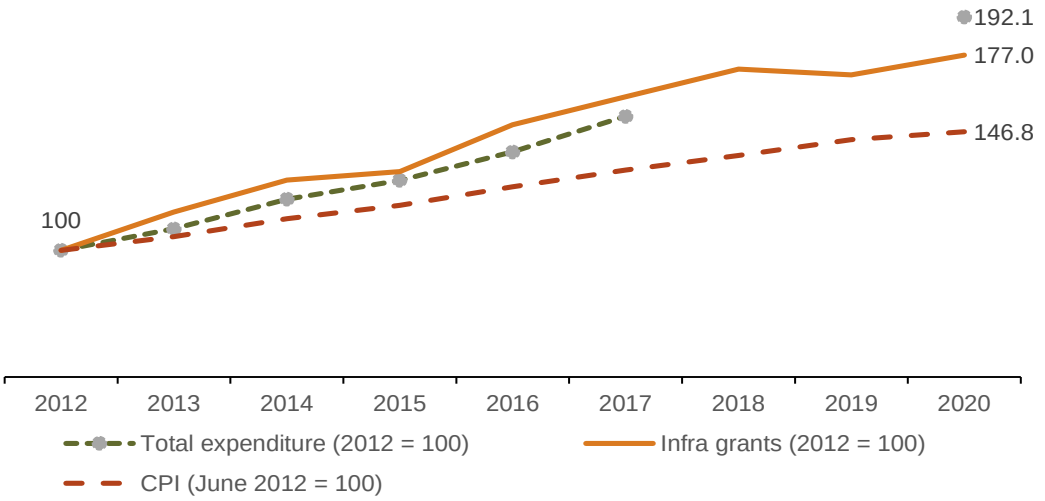
A similar analysis for infrastructure grants shows that these also grew well ahead of inflation until 2018, although less rapidly than the LGES. Growth in infrastructure grants has slowed

[14] There were changes to the way in which municipalities reported to National Treasury in 2018, with the introduction of the Municipal Standard Chart of Accounts. As a result, there were inaccuracies in reporting for 2018 and 2019 and data for these years have been omitted from all expenditure trends presented in this report.

[15] LGES allocations are calculated based on an estimated number of poor households in each municipality, which has remained fixed since the last census in 2011. The extent to which the number of indigent households has grown will not be known until the results of Census2022 become available. Data on the number of registered indigents in municipalities, as reported in Stats SA's annual Non-Financial Census of Municipalities, indicate that the number of indigents registered in all municipalities has remained largely static since 2011. This is likely to say more about processes of indigent registration in municipalities than actual numbers of indigent households.

somewhat since 2018 but dropped below growth in expenditures. Declining growth in infrastructure grants may therefore be placing upward pressure on rates as municipalities need to increase rates and tariffs to fund capital expenditure.

Figure 4: Growth in infrastructure grant allocations to all municipalities combined compared to growth in CPI and growth in total municipal operating expenditure between 2012 and 2020



Source: Author's analysis of municipal expenditure data from National Treasury's Municipal Budget Reporting Reform A2 tables for all municipalities combined for 2015, 2018 and 2021 Medium Term Revenue and Expenditure Frameworks; infrastructure grant data from the Division of Revenue Acts for the relevant years; CPI year-on-year for June each year as reported by Stats SA.

3.2 Un(der)funded mandates and the expansion in standards for rates-funded services

The issue of unfunded mandates has been controversial, and its impact on property rates inflation is difficult to determine. In the metros, at least, it is potentially significant. Strictly speaking, unfunded mandates occur when a municipality carries out a function not allocated to them in the Constitution or legislation. There are several largely undisputed examples of unfunded mandates being carried out by municipalities, including libraries, museums and primary health care. There are also areas of concurrent function between municipalities and other spheres of government where the role of municipalities, particularly metros, has increased over time, often without additional revenue sources (Kumar and Reddy 2019). These mandates may be considered 'underfunded' and include housing provision, public transport and policing. The roll-out of bus rapid transit systems in many metros, for example, is likely to have placed upward pressure on property rates as fees and grants for these systems are seldom sufficient to cover their costs.

As noted by the South African Cities Network (SACN) (2016), other considerations related to the service standards placed upward pressure on expenditures and, therefore, the revenues required from property rates. Such considerations include national or provincial governments setting minimum standards for service delivery that result in significant and/or unintended

costs at the local level; and (often more significantly) political choices that drive the provision of services beyond what is mandated. For example, the latter can be observed in growth in the provision of metro policing or the roll-out of paved roads in rural areas.

3.3 Declining electricity surpluses reducing space for cross-subsidisation

Municipal electricity services have been undergoing substantial shifts in recent years, particularly in metropolitan areas. Rapidly rising electricity tariffs (due largely to rapidly rising electricity bulk prices from Eskom) have driven reductions in electricity sales volumes as well as the rise of small-scale embedded generation (SACN 2018).

Municipalities have historically provided electricity at a substantial surplus and used this surplus to cross-subsidise the provision of other services, including rates-funded services. Electricity surpluses are, however, coming under increasing pressure, declining from 9% of electricity revenues in 2015/16 to 5% in 2019/20.[16] This decline has reduced the opportunity for cross-subsidisation and increased the need to raise property rates.

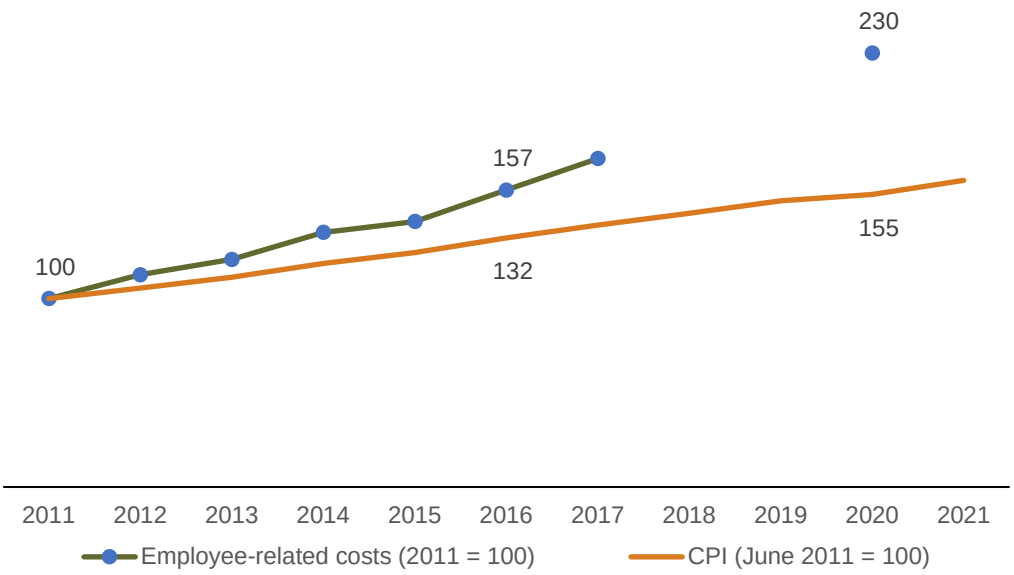
3.4 Employee-related costs[17]

Employee-related costs have increased at a rate significantly ahead of inflation over the past 10 years, as shown in Figure 5. Employee-related costs constitute about 28% of total municipal operating expenditures, and so are a significant driver of increases in the cost of providing municipal services.

[16] Author's calculations based on audited financial data reported by municipalities to National Treasury in the Municipal Budget Reporting Reform tables for 2017 and 2021.

[17] Note that, unless specifically indicated, all data reported in this sub-section on employee-related costs are for municipalities as a whole and not the rates-funded services in particular. This is because financial reporting for individual services is not ring-fenced and reporting on expenditures incurred in providing specific services is poor.

Figure 5: Growth in employee-related costs by all municipalities combined compared to growth in CPI between 2011 and 2021

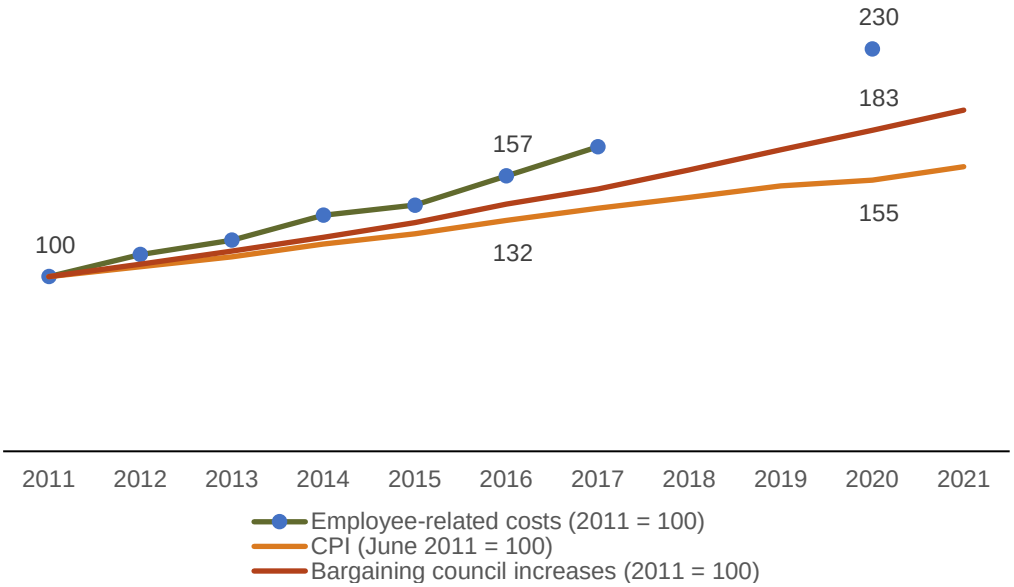


Source: Author's analysis of municipal expenditure data from National Treasury's Municipal Budget Reporting Reform AA tables for all municipalities combined for 2015, 2018 and 2021 Medium Term Revenue and Expenditure Frameworks; CPI year-on-year for June each year as reported by Stats SA.

Employee-related costs are set through two salary processes. Upper limits on salaries for municipal managers and managers who report directly to municipal managers are set by the Minister of CoGTA each year. The minister sets a range for these senior management salaries, and so salaries can be moved within the range, but the upper limits for senior management salaries have not been increased since 2019.

Salaries for other municipal staff are set through a collective bargaining process in which the South African Local Government Association bargains on behalf of local government. These increases are typically ahead of inflation and have been a long-term driver of high growth in employee-related costs. However, as shown in Figure 6, employee-related costs have grown even more rapidly than wages negotiated through the bargaining council.

Figure 6: Growth in employee-related costs by all municipalities combined compared to growth in CPI and salary increases negotiated in the bargaining council between 2011 and 2021



Source: Author's analysis of municipal expenditure data from National Treasury's Municipal Budget Reporting Reform AA tables for all municipalities combined for 2015, 2018 and 2021 Medium Term Revenue and Expenditure Frameworks; CPI year-on-year for June each year as reported by Stats SA, personal communication on bargaining council increases.

Stats SA has suggested that increased staff numbers to improve service delivery has been a further driver of high increases in employee-related costs (Stats SA 2015). However, analyses in the State of City Finances reports published by the SACN every two years suggest that costs per employee have been rising rapidly and that growth in the numbers of employees – at least in the metros – has not been significant (SACN 2020 and 2022).

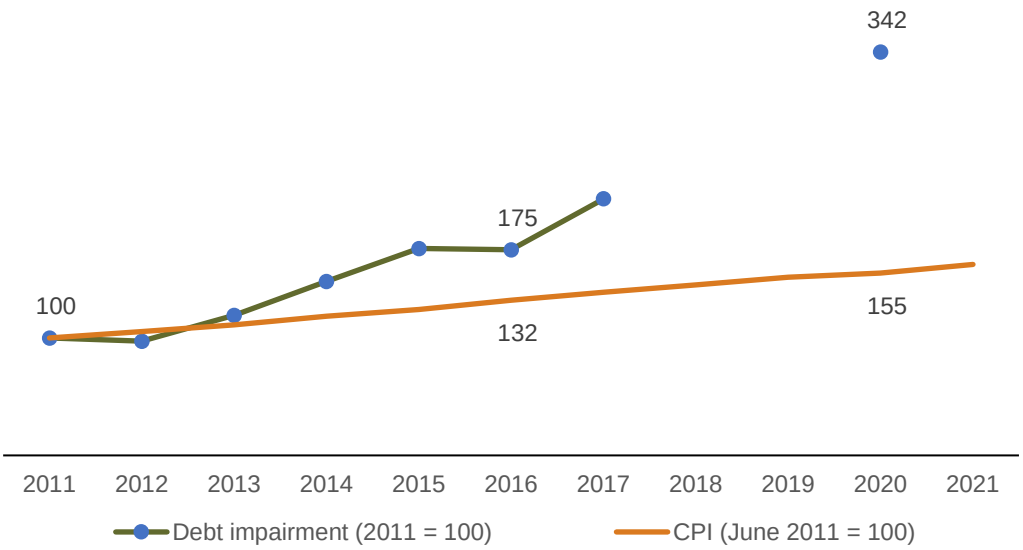
Employee-related costs include staff benefits and bonuses, as well as the costs of overtime. While good data on these expenditures are not available, interviews with metros reported in the State of City Finances reports indicate that high levels of overtime are a key driver of high employee-related costs. Furthermore, allowances for items such as cars and housing are often high and sometimes provided incorrectly (SACN 2022). Once provided, however, these allowances are very difficult to withdraw.

In general, the rapid growth in employee-related costs has been due to the significant power of labour in bargaining council negotiations and in resisting the control of items such as overtime, bonuses and allowances. There have been signs recently that this is shifting, with the Minister of CoGTA not increasing upper limits of salaries for senior management since 2019. The Constitutional Court ruling in February 2022 that the state can renege on collective wage-bargaining agreements if they are not affordable is also significant in this regard, as is strong messaging from the Minister of Finance on the unaffordability of the public sector wage bill.

3.5 Debt impairment

Municipalities report on an accrual basis and therefore report revenues when they are billed, not paid. Debt impairment is a non-cash expenditure item used to make provision that some of the billed revenue will not be paid and will have to be written off. As shown in Figure 7, debt impairment expenditure has been growing more rapidly than CPI since 2013 and even more since 2016.

Figure 7: Growth in debt impairment expenditure by all municipalities combined compared to growth in CPI between 2011 and 2021



Source: Author's analysis of municipal expenditure data from National Treasury's Municipal Budget Reporting Reform AA tables for all municipalities combined for 2015, 2018 and 2021 Medium Term Revenue and Expenditure Frameworks; CPI year-on-year for June each year as reported by Stats SA.

As reported in the 2022 State of City Finances report (SACN 2022), debt impairment expenditure in the eight metros and Msunduzi Local Municipality as a group increased by 42% from 2019 to 2020. This was the most significant single impact on municipal finances that resulted from the COVID-19 pandemic. In many municipalities, councils took decisions to halt debt collection and credit control measures entirely during the pandemic and data reported by the Fiscal and Financial Commission indicated that cash collection rates declined by between 5% and 10% across all municipal categories (Fiscal and Financial Commission 2021). Data suggest that debt impairment declined marginally in 2021 but still remained high. The extent to which municipalities can reintroduce credit control mechanisms and improve cash collection rates (and therefore reduce the need for debt impairment) going forward is still unknown.

Debt impairment is an expenditure item for municipalities, and tariffs must be increased to cover this. This can result in a dangerous downward spiral: customers do not pay, so debt impairment rises, tariffs increase and become less affordable, and levels of non-payment rise further.

4. Recommendations

While there is limited regulation and oversight of property rates, it is appropriate that municipalities have a high degree of discretion in setting these rates. Property rates are an important general revenue source, are a strongly progressive tax and are largely pro-poor. However, there does appear to be scope to provide better support and capacitation to municipalities regarding property rates, particularly concerning valuations. It is recommended that focus be given to the following areas and interventions made where necessary:

- Unfunded, underfunded or expanding municipal mandates are complex and must continue to be addressed through appropriate intergovernmental processes.
- Municipalities should be cautious about expanding service delivery standards or mandates in a constrained economic environment with significant affordability pressures on residents and businesses without carefully assessing the financial implications.
- Work on alternative revenue sources for municipalities,[18] prompted largely by the shifts in municipal electricity supply businesses, is under way in National Treasury and should remain a key priority.
- Municipalities must be supported to contain employee-related costs as a matter of urgency.
- Municipalities must reintroduce debt collection and credit control measures and contain increases in debt impairment. This must be accompanied by careful indigent management to ensure that subsidies are accurately targeted to those that need them.

Interventions on many of these areas, particularly those related to employee costs, debt collection and credit control, are likely to face resistance and require strong political support.

[18] Some of the options suggested have included property transfer duties linked to local property markets; additional fuel levies for local roads; vehicle licence fees; public transport permits; tourism or hotel occupancy taxes; street advertisement taxes (billboards); weigh-in bridges in mining areas; lease of fibre optic cables and sales of bandwidth; parking lot taxes; air pollution taxes; harbour taxes; licensing of mortuaries; and dumping site usage fees. A local business tax (a tax on payroll or on local turnover) is the option that has been most extensively explored to date. eThekwini submitted a proposal for such a tax in 2011 but National Treasury ultimately rejected the proposal, arguing that slow economic growth would make the introduction of a new tax unpalatable, as well as the fact that municipalities were not maximising their existing revenue sources.

References

Ali, M, Fjeldstad, O-H, and Katera, L. 2017. 'Property taxation in developing countries'. *Taxation in Developing Countries* 16(1): 1–4.

City of Cape Town. 2022. 'General and supplementary valuations'.

https://www.capetown.gov.za/Family%20and%20home/Residential-property-and-houses/property-valuations/general-and-supplementary-valuations.

Fiscal and Financial Commission. 2021. *Technical report: submission for the division of revenue 2022/23*. Pretoria: Financial and Fiscal Commission.

Franzsen, R and McCluskey, W (eds). 2017. Property tax in Africa: status, challenges, and prospects. Cambridge, Mass.: Lincoln Institute for Land Policy.

Granger, H. 2019. 'Property tax reform for local government revenue mobilization in Sub-Saharan Africa'. Adam Smith International.

Kumar, K and Reddy, P S. 2019. 'Metropolitan financing and development in South Africa: Quo Vadis?' Ghana Journal of Development Studies 16(2): 26.

Lightstone. 2022. 'Residential property index: inside the data'. https://assets.lightstoneconsumer.co.za/marketing/HousePriceIndices-January2021.pdf.

Moore, M and Monkam, N. 2015. 'How property tax would benefit Africa'. *Africa Research Institute*. https://www.africaresearchinstitute.org/newsite/wp-content/uploads/2015/01/ARI-Counterpoint-PropertyTax-download.pdf.

National Treasury. 2018. 'Assessment of the viability of municipalities in the North West and Gauteng Province'. Unpublished research report.

The South African Cities Network (SACN). 2016. 'Local government safety functions and the question of unfunded mandates'. *Urban Safety Brief* 3: 1–8. https://www.saferspaces.org.za/uploads/files/20161129-USRG-Urban-Safety-Brief-No3-UnfundedMandates.pdf.

SACN. 2018. 'State of city finances 2018'. https://www.sacities.net/wp-content/uploads/2020/07/State-of-City-Finances-Report-2018.pdf.

SACN. 2020. 'State of city finances 2020'. https://www.sacities.net/wp-content/uploads/2021/03/SOCF-2020-Report.pdf.

SACN. 2022. 'State of city finances 2022'. https://www.sacities.net/publication/state-of-city-finances-2022/.

South African Council for the Property Valuers Profession. 2021. 'South African standard: municipal valuations for property rating'.

https://cdn.ymaws.com/www.sacpvp.co.za/resource/collection/B8DB515D-44B2-441B-9F6B-6E96440DAD2A/SA_Stadard_Municipal_Valuations_for_Property_R.pdf.

South African Property Owners Association. 2019. 'Rates and taxes report: commercial property rates & taxes: a comparison across property sectors, segments and municipalities'. https://propertywheel.co.za/wp-content/uploads/nov-2019-sapoa-rates-taxes-report.pdf.

Statistics South Africa. 2015. 'Municipalities experience a rise in employee-related costs'. https://www.statssa.gov.za/?p=4888.

Steytler, N. 2008. 'Municipal property rates regulation: mere regulation or irrational ratios?' *Local Government Bulletin* 10(1). Dullah Omar Institute.

Tshangana, A. 2021. 'Citymark focus note: exploring the impact of metro rates policies on the affordable housing sector'. Centre for Affordable Housing Finance in Africa. https://housingfinanceafrica.org/documents/citymark-focus-note-exploring-the-impact-of-metro-rates-policies-on-the-affordable-housing-sector/.

Special OBEN 2301* – July 2023

Review of administered prices in South Africa: Water tariffs

Kim Walsh

Abstract

Water tariffs are set by each of the 144 water services authorities (WSAs) in South Africa each year. No comprehensive data set for the water tariffs in all WSAs is publicly available, so there is no way to determine the increase in water price in each WSA. Stats SA data suggest that water prices increased steadily above inflation between 2017 and 2022. The extent to which this is true will be different in each WSA. The setting of retail water tariffs by WSAs is part of the overall annual municipal budget process. Tariffs are set to achieve the revenues required to ensure an overall funded budget. This is an inherently political process. Outside of the metropolitan municipalities, few WSAs use any tool or methodology to set water tariffs; these tariffs are typically simply increased at a rate that blends the consumer price index and any increase in the bulk water tariff paid to a water board (where they are in place). Factors that have driven increases in the costs of water provision include (1) slower growth in infrastructure grants; (2) high growth in employee-related costs; (3) high growth in bulk water costs; (4) high growth in electricity costs; (5) high growth in debt impairment; and (6) high levels of non-revenue water. Rising water scarcity and historic under-investment in asset management are anticipated to be key drivers of the need to increase water prices in future. Recommendations include (1) strengthening the economic regulation of water pricing; (2) establishing a publicly accessible database for water tariffs; (3) introducing a requirement for separate financial reporting for each municipal trading service, including water; (4) providing urgent support to municipalities to contain employee-related costs; (5) municipalities reintroducing debt collection and credit control measures, accompanied by careful indigent management; and (6) containing and reducing levels of non-revenue water. Funding freed up through these interventions should be directed to improved asset management.

1. Introduction

Access to water is explicitly recognised as a human right through Resolution 64/292 of the United Nations General Assembly, which states that clean drinking water and sanitation are essential to realising all human rights (De Albuquerque and Roaf 2020). If water prices increase too rapidly, they become unaffordable to customers, implicitly denying them access to their basic right to water. However, water pricing must strike a delicate balance between ensuring affordable, equitable access to water and adequately recovering costs so that services can be provided in a financially sustainable manner into the future.

*The views expressed in these Special Economic Notes are those of the author(s) and should not be attributed to the South African Reserve Bank or South African Reserve Bank policy. While every precaution is taken to ensure the accuracy of information, the South African Reserve Bank shall not be liable to any person for inaccurate information, omissions or opinions contained herein.

This note will discuss current mechanisms for setting water prices in South Africa and key drivers of water price inflation and will make recommendations for water pricing in future.[1] Before doing that, however, the note will discuss the complexity of determining what 'price' of water to compare, how water prices have changed over time in South Africa, and how that compares to price changes in other emerging markets.[2]

1.1 What 'price' to compare?

Water tariffs are set annually by 144 water services authorities (WSAs) in South Africa. New tariffs come into force on 1 July each year. A WSA may be a single municipality or may cover several municipalities. It is important to be aware that the way water tariffs are structured makes it difficult to establish a 'price' that is easily comparable between WSAs or over time. See the annexure for further details of this complexity.

It is also important to bear in mind that the 144 WSAs are a diverse group. Some cover only small populations and sell small volumes of water, while others cover large populations and sell large volumes of water. Price increases may differ between these WSAs. Determining an 'average' increase reflective of the distribution of customers served by these WSAs or the volumes of water they sell would ideally require weighting of some sort.

1.2 What has the level of inflation in water prices been?

No comprehensive data set for the water tariffs in all 144 WSAs is publicly available, and there is therefore no way to determine the increase in water price in each WSA.[3] Statistics South Africa (Stats SA) includes 'water supply' in the basket of goods used to calculate the consumer price index (CPI). Price increases are captured for metropolitan and a sample of other urban areas in each province, not for each WSA. A geometric average price is determined for each municipality for which data are gathered from budget documentation. The overall price increase in the CPI is a simple average with no weighting applied. The water supply price increase calculated according to this method is shown in Figure 1.

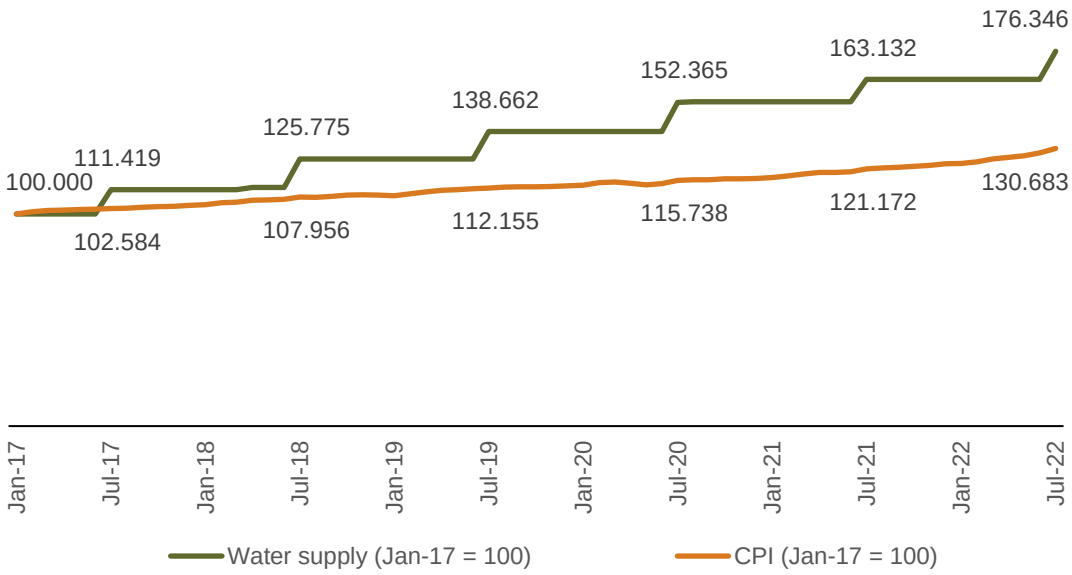
---

1 This note focusses on water prices. Many municipalities provide water and wastewater together as a single 'water services' function. While wastewater tariffs are structured differently to water tariffs, the cost drivers for the two services are similar, and many municipalities will apply the same price increases to both. Much of the discussion of price-setting mechanisms and inflation drivers in this note applies to both water and wastewater.

2 The Palmer Development Group has written a paper on municipal rates and taxes for this series. Sections of that paper are duplicated in this note, as many of the processes for setting water tariffs align with those for setting property rates, and several of the inflation drivers are the same.

3 WSAs should publish their water tariffs on their website, but many do not. When they are reported, they are not reported in a consistent format, and the presence of many different water tariffs for each WSA makes it difficult to compare tariffs between WSAs. As the regulator, the national Department of Water and Sanitation should collect tariff data for each WSA. These data are not publicly available, however.

Figure 1: Growth in price of water supply compared to CPI between 2017 and 2022



Source: Author's analysis of Stats SA data on water supply price and CPI.

Figure 1 shows that the water supply price has increased steadily ahead of inflation. The **average increase in the water supply price from July 2017 to July 2022, according to Stats SA, was 10.3% per year**, compared to an average CPI of 3.9% per year over the same period. As noted in the discussion in Section 1.1 and the associated annexure, water price increases have differed from WSA to WSA and also differ depending on the volume of water consumed. This is demonstrated in Table 1, which shows the average *real* increase per year (i.e. the increase in addition to inflation) in the cost of two different volumes of water for residential customers in each of the metros between 2015/16 and 2020/21.

Table 1: Average real annual increases in the price of 20 kl and 40 kl of water between 2016 and 2021 for domestic customers in each of the metropolitan municipalities

Water volume (kl per month)	20	40
Johannesburg	11.0%	6.3%
Cape Town	18.9%	9.9%
eThekwini	16.6%	9.3%
Tshwane	7.8%	6.2%
Ekurhuleni	15.0%	10.6%
Nelson Mandela Bay	5.1%	8.1%
Mangaung	4.7%	5.4%
Buffalo City	4.8%	4.8%

Source: Author's analysis of Stats SA data on water supply price and CPI.

Average real water price increases in the metros over these five years ranged from 4.7% to 18.9%, depending on the metro and the volume of water consumed. In some cases, changes in tariff structure, the introduction of fixed charges, and changes in how free basic

water is allocated have influenced increases. In most cases, the price increase was higher for customers consuming lower volumes of water. Increases have also sometimes varied between residential and other customer types. For example, eThekwini introduced a 5.9% increase in water tariffs for residential customers in July 2022 but increased commercial and industrial tariffs by 9%.[4]

1.3 How does this compare to other emerging markets?

Consistent data on emerging markets are difficult to access, but Global Water Intelligence (GWI) publishes an annual Global Water Tariff Survey covering more than 350 cities worldwide. Disaggregated data are not publicly available, but reported average increases for all cities surveyed between 2017 and 2019 ranged from 3.3% to 3.9%. There is a high degree of variability, with a sample of American water utilities showing a range of increases from 5.1% to 47.2% in 2018, for example (GWI 2018).[5] South African tariff increases are above the average increases reported by GWI but are not out of keeping with increases reported in individual cities mentioned in the publicly available reporting.

Data in Table 2 from Yates et a. (2020) show tariff changes in several sub-Saharan cities between 2018 and 2019 that show increases of a similar magnitude to those in South Africa.

Table 2: Water tariff increases between 2018 and 2019 in a sample of cities in sub-Saharan Africa

City	Tariff increase
Kigali (Rwanda)	77.1%
Lome (Togo)	19.0%
Mbabane (eSwatini)	13.6%
Windhoek (Namibia)	9.9%
Victoria (Seychelles)	8.3%
Accra (Ghana)	8.0%
Dakar (Senegal)	7.4%
Lilongwe (Malawi)	5.0%
Harare (Zimbabwe)	-62.0%

Source: Yates et al. (2020).

4 These increases are taken from the eThekwini tariff book, which offers no explanation for why the increases differed for different customers.

5 The GWI report for 2020 found an "unprecedented number of falls in domestic water and wastewater tariffs". Latin America and the Caribbean, Asia Pacific and sub-Saharan Africa all saw an average decrease in tariffs in this year, "mainly driven by the range of coronavirus responses introduced in these regions". However, the Middle East and North Africa saw a 4.8% average increase between 2019 and 2020 (GWI 2020). Key drivers of tariff increases have included prolonged drought, ageing infrastructure, pressure from external investors and subsidy cuts (GWI 2018). The 2020 Global Water Tariff Survey noted the introduction of new regulations related to water pricing in several countries. Repairs, maintenance and upgrades to infrastructure were identified as key drivers of price increases in some countries, while water scarcity and climate change were significant factors in others (GWI 2020).

2. Description of current price-setting mechanism

This note focuses on the price of potable water. Potable water sits at the end of the 'water value chain' that includes the management and extraction of raw water, its treatment (referred to as the 'bulk water service') and its ultimate distribution to customers. The discussion will focus on the setting of the **retail water tariff** charged to users of potable water by WSAs. Tariffs and charges are levied at each step along the water value chain, with each feeding into the eventual retail water tariff.[6]

The setting of retail water tariffs by WSAs is part of the overall annual municipal budget process. Tariffs are set to achieve the revenues required to ensure an overall funded budget. **It is important to note that this is an inherently political process**. Technical input and recommended tariff increases are provided by municipal officials, but increases must ultimately be approved by Council and go through a process of public participation.

Water tariff processes are sometimes led by budget or revenue departments, sometimes by technical services departments and sometimes by these two departments jointly. These processes are very unclear in some cases, with municipal officials offering contradictory narratives about who is responsible (National Treasury 2019).

The methodology applied in setting tariffs also varies. Research conducted in the North West and Gauteng provinces found that no local municipalities in these provinces used any type of model or tool to set their water tariffs (National Treasury 2019). A relatively small number of municipalities undertook some sort of analysis to inform tariff setting, looking at growth in anticipated cost drivers or benchmarking with other municipalities. Most municipalities, however, simply adjusted tariffs by inflation only. Where there is a water board in place, most municipalities factored the bulk water price increase signalled by the water board into the tariff. Water tariffs were thus increased at a rate that blends the water board increase and CPI.

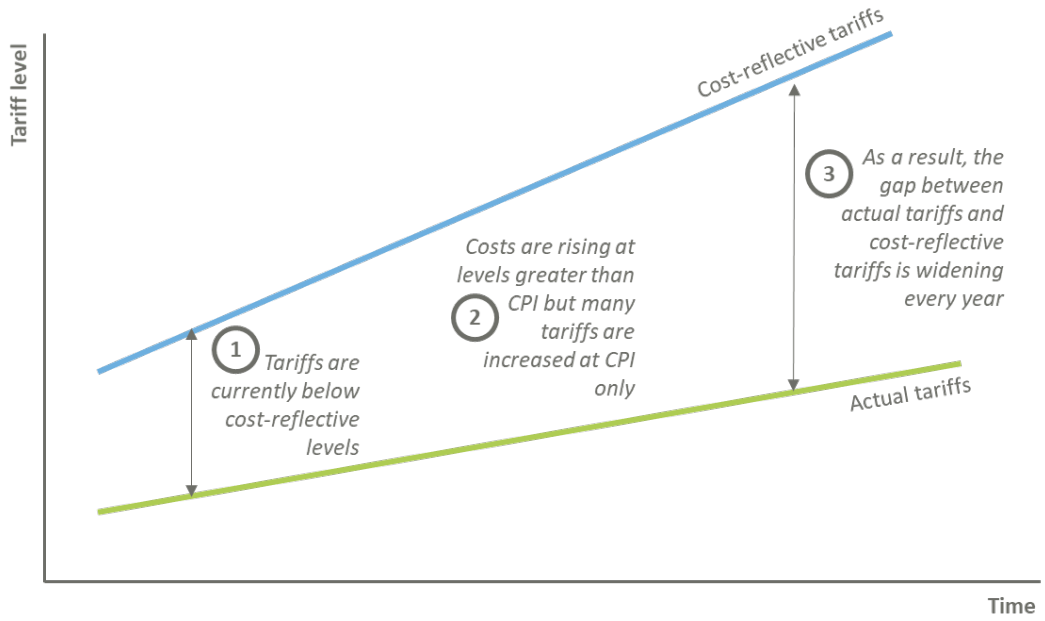
Substantial weight is given to the Municipal Finance Management Act Municipal Budget Circular distributed by National Treasury each year. This circular typically provides the anticipated CPI and stipulates that municipalities must justify any increase in tariffs greater than CPI. Many municipalities simply interpret this circular as prescribing tariff increases at CPI. Of the 24 municipalities in North West and Gauteng provinces interviewed as part of the 2019 National Treasury study, only two reported having justified increases higher than the prescribed CPI rate in their budget narratives. The situation differs somewhat in the metropolitan municipalities, which regularly approve water tariff increases above CPI.

---

[6] The Department of Water and Sanitation levies a raw water charge that includes charges for water resource management, water resource infrastructure, waste discharge mitigation and water research. WSAs that treat their own bulk water will pay the raw water charge directly, so raw water is a component of their overall water distribution cost. Government-owned water boards operate some water resource infrastructure, bulk potable water supply schemes (selling to municipalities and industries), some retail water infrastructure and some wastewater systems. Nine water boards currently provide bulk water to 58 municipalities. All the metropolitan municipalities other than Cape Town and Nelson Mandela Bay are provided with bulk water by a water board. Where a WSA receives bulk water from a water board, the water board will pay the raw water charge and include it as a component in calculating a bulk water tariff. A WSA that receives bulk water from a water board will thus include the cost of bulk water in its overall water distribution cost.

The key point here is that the tariff-setting process is seldom based on an analysis of the change in the cost of providing the water service. Rather, tariffs are set within an overall budget process that considers what revenue increases are required from the budget and what tariff increases are affordable to customers or are politically acceptable to councils. As a result, there is a perception[7] of a widening gap between the cost of supplying water and the tariffs levied, as illustrated in Figure 2.

Figure 2: Implications of current tariff-setting process for the gap between actual and cost-reflective tariffs



Source: National Treasury (2019).

South African municipalities identify the affordability of tariffs and poor revenue collection as the key barrier to improving tariff-setting processes (National Treasury 2019). They state that there is no point in undertaking rigorous analysis to demonstrate that tariffs must be increased substantially, as current tariff levels are unaffordable, and levels of non-payment are already high. However, few municipalities have conducted a rigorous assessment of tariff affordability and predominantly assume that high levels of non-payment are due to an inability to pay.[8] They also indicate that lack of support from political leadership for revenue collection efforts

7 The word 'perception' is used here because there are in fact no good data on the cost of an efficient and effective water supply in most municipalities. It is thus impossible to accurately determine the extent to which tariffs are lower than this efficient, effective cost of supply. However, extensive underinvestment in the maintenance and renewal of assets and an increase in water-supply systems' failures indicate that current expenditure levels are mostly lower than required to run the water service sustainably. On the other hand, some expenditures may be bloated and inefficient. South Africa is not unusual here – a 2010 study by the World Bank found that only 36% of African water utilities surveyed were recovering their operations and maintenance costs from their tariffs, and only 9% were covering operations and maintenance plus some capital cost (Bannerjee et al. 2010).

8 In fact, non-payment may be due to a lack of willingness to pay, not a lack of ability to pay, with willingness to pay influenced by factors such as the quality of the service received, perceptions of trustworthiness of the municipality in using revenues appropriately, perceptions of whether others are paying and what enforcement is in place (Fjeldstad 2004).

is a key issue. Municipal officials believe that councillors trade municipal financial viability for political support when considering what tariff increases to approve (National Treasury 2019).

According to National Treasury (2019), other barriers to more rigorous tariff setting are:

- inadequacies in the budget processes that lead to a lack of data to inform proper cost determination;
- inadequacy of data on the number of customers and customer profiles, particularly concerning indigent customers who must be cross-subsidised;
- tariff-setting tools that are inappropriate for the context;
- inadequate municipal capacity to run tariff-modelling processes; and
- lack of clarity about roles and responsibilities concerning tariff setting.

Notably, the narrative here is that municipalities often inflate tariffs at CPI, but the data published by Stats SA on water price increases indicate they increased steadily above inflation between 2017 and 2022. This may be due to the sample used by Stats SA, which focuses on urban areas (metros and one or two other urban areas in each province). Metros are typically higher capacity and are therefore more likely to use an analysis of change in the water-supply cost as inputs to tariff-setting processes. At least some of them do make use of tariff-setting models or tools. All metros other than Cape Town and Nelson Mandela Bay are supplied with bulk water by water boards and will factor bulk water price increases into their tariff determination processes.[9] The data in Table 1 show that all metros increased their water prices at an average rate well ahead of inflation between 2016 and 2021. That said, the key points about the political nature of the tariff-setting process and the fact that tariff increases are often informed more by perceptions of affordability than by changes in input costs apply to metros and other municipalities.

3. Inflation drivers

A theoretically sound water tariff-setting process would include the following steps:

- determine the cost of supply of the service, including both direct and indirect costs;[10]
- allow for surpluses or deficits;[11]
- allocate subsidies and other revenues to determine the revenue required;[12] and

9 The lack of a comprehensive database on water tariffs means it is not possible to assess the extent to which the presence of a water board affects the final retail prices charged to customers. This may be an area for further research. Water board tariffs vary widely, as do the tariff increases they introduce each year.

10 The latter refers to a portion of municipal overheads (budget and finance department, human resources, information technology, etc.) allocated to the service. The supply cost should also include a provision for capital expenditure sufficient to allow for necessary expansions to infrastructure and the management of existing assets.

11 This is somewhat controversial, but current practice in municipalities certainly includes a high degree of cross-subsidisation between services and customer groups. Some services operate at surpluses that are used to cross-subsidise losses on other services.

12 The Local Government Equitable Share (LGES) is a substantial, unconditional annual grant provided to municipalities through the Division of Revenue Act. Municipalities also receive a range of conditional

- apply tariff structures to generate the revenue required.

Under such a process, the drivers of inflation in water tariffs would be increases in the key expenditures associated with water distribution, and changes in the quantum of grants received and the amount allocated to water. As noted in the previous section, however, the actual impact of these inflation drivers on tariff levels is sometimes delinked through the tariff-setting process, with increases ultimately coming down to perceptions of affordability. This section will nonetheless discuss trends in key inputs to a theoretical tariff-setting process that may be driving water price inflation in some municipalities, including metros.

It is important to note that municipalities report their finances for the institution as a whole,[13] so data on municipal expenditure on individual services are typically unavailable; data on water sales volumes are similarly not available in any national datasets. As a result, data on trends in costs for the water service, specifically per kilolitre of water sold, are not available without direct collection of data from municipalities. This makes analysing municipal water business in isolation very difficult, and data quoted in this section are often for municipalities as a whole, not exclusively for the water service.

3.1 Water scarcity

Water scarcity affects pricing through two primary mechanisms. Firstly, in times of drought, municipalities typically implement water restriction tariffs. These are specifically intended to make the use of large water volumes expensive and to reduce water demand and can therefore result in very large price increases while in place.

Secondly, dealing with water scarcity over the longer term may require investment in alternative water resources. The costs of some of these resources (desalination, for example) may be significantly higher than the costs of existing resources. These costs must be recovered at least in part through water tariffs and are likely to be a driver of water price inflation in future. In its post-drought water strategy, for example, the City of Cape Town has signalled that customers should expect real increases in water and sanitation tariffs (City of Cape Town 2020).

3.2 State funding through grants

It may seem contradictory to think of trends in state funding through grants as an 'inflation driver' for water, but if the growth in state funding is lower than the growth in costs, the quantum of revenue that must be generated through tariffs will be higher, driving higher water tariff increases. The Local Government Equitable Share (LGES) is a substantial, unconditional[14]

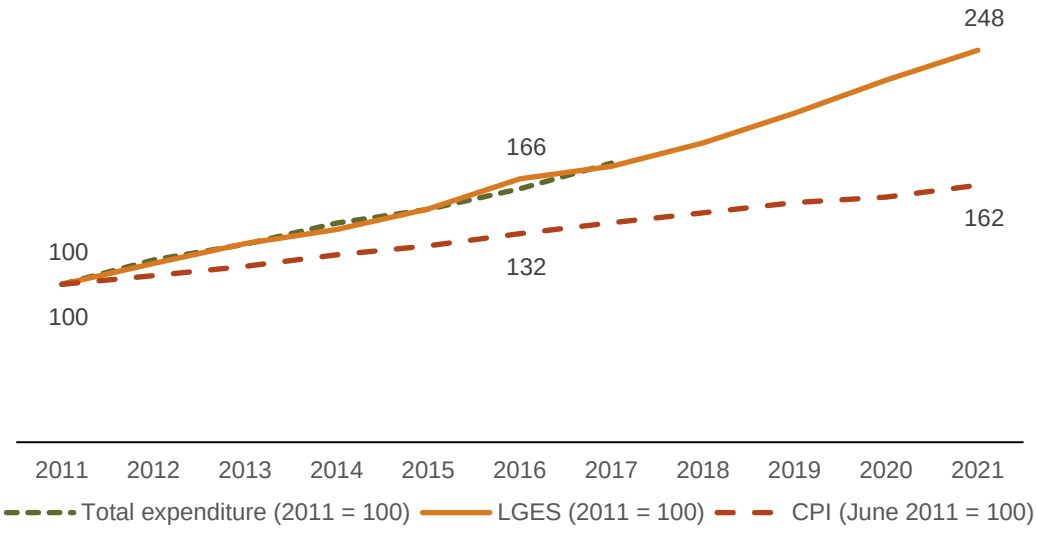
grants, largely for capital expenditure, the most significant being the Urban Settlements Development Grant, Integrated Urban Development Grant and Municipal Infrastructure Grant.

13 Municipalities report a breakdown of their overall expenditures and revenues by function to National Treasury, but this is not required in their audited annual financial statements. While National Treasury systems allow for the extraction of expenditure data by type (employee-related costs, etc.) for each individual function (such as water), the reporting to these systems is currently poor and the data are often not available. The ongoing roll-out of the Municipal Standard Chart of Accounts, a standardised method of recording budget and financial data that allows for the disaggregation of data in multiple ways, is intended to improve this situation. At the very least, making the ring-fenced reporting of expenditures on trading services mandatory would be useful.

14 While unconditional, it is intended to subsidise the provision of basic services to the poor.

annual grant provided to municipalities through the Division of Revenue Act. Figure 3 shows that LGES allocations to all municipalities combined have increased at a rate well above inflation over the past 10 years.[15]

Figure 3: Growth in LGES allocations to all municipalities combined compared to growth in CPI and growth in total municipal operating expenditure between 2011 and 2021[16]



Source: Author's analysis of municipal expenditure data from National Treasury Municipal Budget Reporting and Reform (MBRR) A2 tables for all municipalities combined for 2015, 2018 and 2021 Medium Term Revenue and Expenditure Frameworks (MTREFs); LGES data from the Division of Revenue Acts for the relevant years; and CPI year on year (y-o-y) for June each year as reported by Stats SA.

It is also notable that growth in total operating expenditure by municipalities has tracked LGES growth almost exactly. The close tracking of total municipal expenditure with LGES allocations indicates that the portion of expenditures covered by the subsidy has remained largely fixed over the period, and declining LGES allocations have therefore not been an inflation driver for water prices over the past 10 years.

Municipalities often report that the number of poor households to which they must provide subsidised services has grown and that subsidy allocations are increasingly inadequate to cover the costs, but there are currently insufficient data to determine the accuracy of this

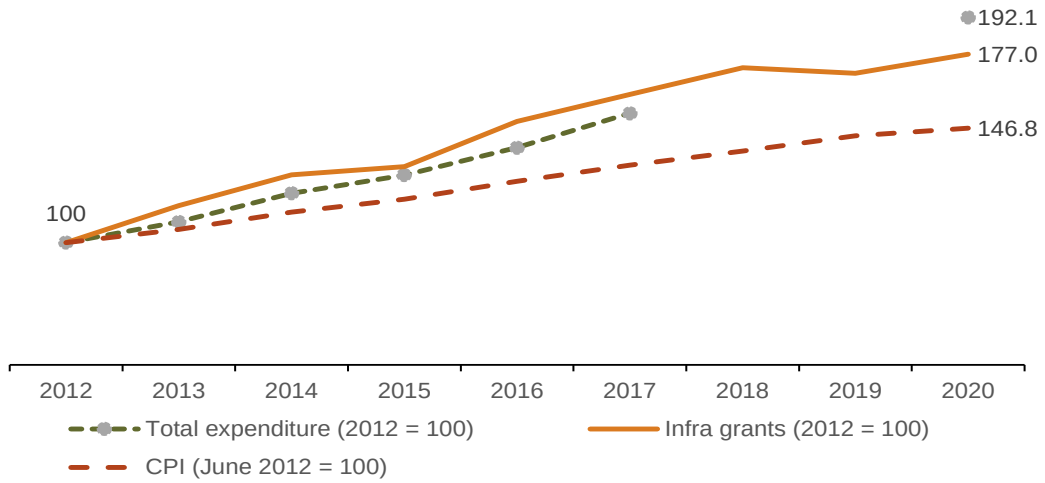
15 Because the LGES is unconditional, municipalities can allocate it between functions as they see fit. The quantum of LGES received by the municipality and the quantum they choose to allocate to water will significantly influence the amount of revenue that must be generated through tariffs. However, increasing the quantum of LGES allocated to water means reducing the quantum allocated to other functions, thus driving up the tariffs for those functions. Municipalities are not required to report on how much LGES they allocate to each function. The data shown here are for total LGES allocations and not for allocations made to water specifically.

16 The Municipal Standard Chart of Accounts of 2018 introduced changes to how municipalities report to National Treasury. This led to inaccuracies in reporting for 2018 and 2019, and data for these years has been omitted from all expenditure trends presented in this report.

assertion.[17] There has certainly been upward pressure on the level of subsidy required in the form of free basic water (FBW), and many metropolitan municipalities have increased the volume of FBW.[18]

A similar analysis for infrastructure grants shows that these grew well ahead of inflation until 2018, though less rapidly than the LGES. Growth in infrastructure grants has slowed somewhat since 2018 but dropped below growth in expenditures. Declining growth in infrastructure grants may be placing upward pressure on water prices, as municipalities need to increase tariffs to fund capital expenditure.

Figure 4: Growth in infrastructure grant allocations to all municipalities combined compared to growth in CPI and growth in total municipal operating expenditure between 2011 and 2021



Source: Author's analysis of municipal expenditure data from National Treasury MBRR A2 tables for all municipalities combined for 2015, 2018 and 2021 MTREFs; infrastructure grant data from the Division of Revenue Acts for the relevant years; CPI y-o-y for June each year as reported by Stats SA.

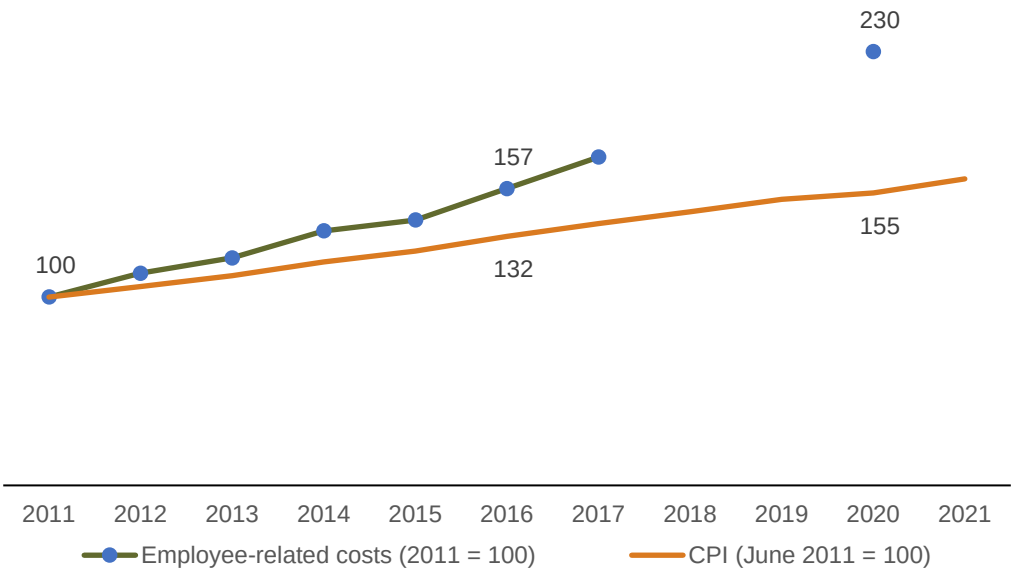
17 LGES allocations are calculated on an estimated number of poor households in each municipality, which has remained fixed since the last census in 2011. The extent to which the number of indigent households has grown will not be known until the results of Census2022 become available. Data on the number of registered indigents in municipalities, as reported in Stats SA's annual Non-Financial Census of Municipalities, indicate that the number of indigent households registered in all municipalities has remained largely static since 2011. This is likely to say more about processes of indigent registration in municipalities than actual numbers of indigent households.

18 Policy in South Africa requires that 25 litres per person per day or 6 kilolitres (kl) of water per household per month are provided free by municipalities. This volume has been challenged as inadequate (see, for example, Mazibuko (2006)). Free amounts provided to registered indigents are between 10 kl and 15 kl in Johannesburg (depending on assessed level of indigence), 12 kl in Tshwane, 10.5 kl in Cape Town, 10 kl in Mangaung, 9 kl in Ekurhuleni and 8 kl in Nelson Mandela Bay. The other metros provide 6 kl, as required by national policy.

3.3 Employee-related costs[19]

Employee-related costs have increased significantly faster than headline inflation over the past 10 years, as shown in Figure 5. Employee-related costs comprise about 28% of total municipal operating expenditures and are a significant driver of increases in the cost of providing municipal services.

Figure 5: Growth in employee-related costs by all municipalities combined compared to growth in CPI between 2011 and 2021



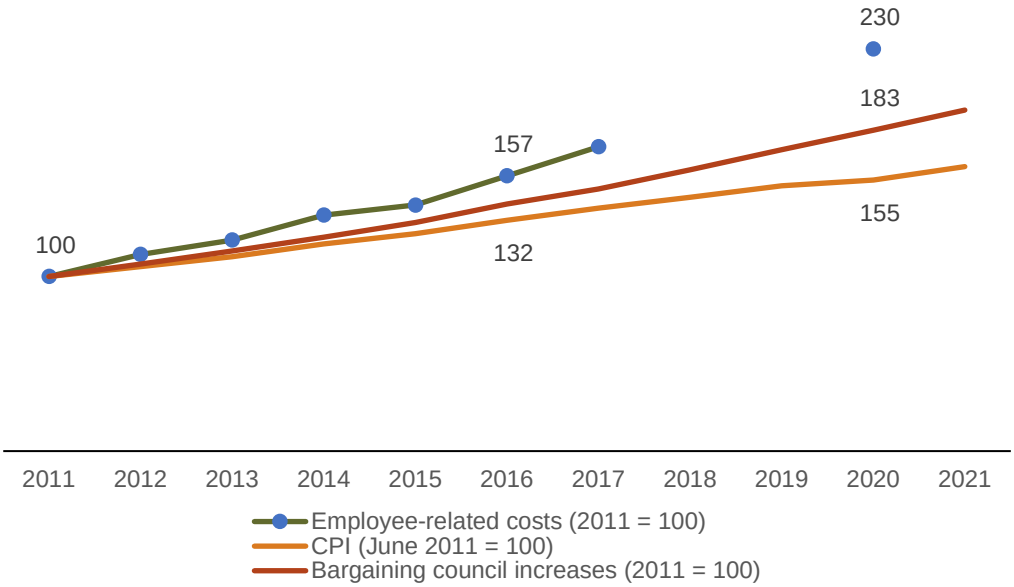
Source: Author's analysis of municipal expenditure data from National Treasury MBRR AA tables for all municipalities combined for 2015, 2018 and 2021 MTREFs; CPI y-o-y for June each year as reported by Stats SA.

Employee-related costs are set through two salary processes. Upper limits on salaries for municipal managers and managers who report directly to municipal managers are set by the Minister of Cooperative Governance and Traditional Affairs each year. The Minister sets a range for these senior management salaries so that salaries can be moved within the range, but the upper limits for senior management salaries have not been increased since 2019.

Salaries for other municipal staff are set through a collective bargaining process in which the South African Local Government Association (SALGA) bargains on behalf of local government. These increases are typically ahead of inflation, and above-inflation increases in salaries negotiated through the collective bargaining process have been a long-term driver of high growth in employee-related costs. However, as shown in Figure 6, employee-related costs have grown even more rapidly than wages negotiated through the bargaining council.

[19] Unless specifically indicated, all data reported in this sub-section on employee-related costs are for municipalities as a whole and not for the water service in particular. This is because the water service is not ring-fenced, and reporting on expenditures incurred in providing water specifically is poor.

Figure 6: Growth in employee-related costs by all municipalities combined compared to growth in CPI and salary increases negotiated in the bargaining council between 2011 and 2021



Source: Author's analysis of municipal expenditure data from National Treasury MBRR AA tables for all municipalities combined for 2015, 2018 and 2021 MTREFs; CPI y-o-y for June each year as reported by Stats SA; personal communication on bargaining council increases.

Stats SA (2015) has suggested that increases in staff numbers to improve service delivery has been a further driver of high increases in employee-related costs, but analysis presented in reports such as the biennial State of City Finances reports published by the South African Cities Network (SACN) suggests that employee-related costs per employee have been rising rapidly and that growth in the number of employees in the metros has not been significant (SACN 2020 and 2022).

Employee-related costs include staff benefits and bonuses, as well as the costs of overtime. While good data on these expenditures are not available, interviews with metros reported in the State of City Finances reports indicate that very high levels of overtime are a key driver of high employee-related costs, as are allowances for items such as cars and housing, which are often high and sometimes provided incorrectly (SACN 2022). Once provided, however, these allowances are very difficult to withdraw.

In general, the rapid growth rate in employee-related costs has been due to the significant labour power in bargaining council negotiations and in resisting the control of items such as overtime, bonuses and allowances. Recent signs suggest that this is shifting, with the Minister of Cooperative Governance and Traditional Affairs not increasing the upper limits of senior-management salaries since 2019. The Constitutional Court ruling in February 2022 that the state can renege on collective wage bargaining agreements if they are not affordable is also significant in this regard, as is strong messaging from the Minister of Finance on the unaffordability of the public sector wage bill.

3.4 Bulk water

Bulk water is a large proportion of total expenditure for most of the 58 municipalities that receive bulk water via a water board. The share of bulk water purchases in total water services expenditure differs significantly, from only 7% of reported water expenditure in Mantsopa local municipality to as much as 70% in the City of Tshwane (Palmer Development Group's own calculations based on municipal budget data for 2021). To some extent, this is due to differences in how municipalities allocate expenditures between the various services they provide. Johannesburg Water, which produces ring-fenced financial statements, reported that 50% of its expenditure was on bulk water purchases in 2021.

As noted in Section 2, nine water boards currently operate in South Africa. Section 42 of the Municipal Finance Management Act states that Parliament must approve proposed bulk tariff increases based on a recommendation from the Minister of Water and Sanitation after comment from SALGA and National Treasury. There is wide variation in the approved bulk tariff increases requested by water boards, as shown in Table 3.

Table 3: Approved bulk tariffs per water board for 2017/18 to 2021/22 and proposed tariffs for 2022/21, in rands per kl

	2020/21	2021/22	2022/23
Amatola Water	0.0%	9.9%	5.7%
Bloem Water	0.0%	11.0%	9.0%
Lepelle Northern Water	0.0%	7.0%	9.7%
Magalies Water	0.0%	13.1%	12.2%
Mhlathuze Water	0.0%	7.7%	10.1%
Overberg Water	0.0%	55.9%	8.0%
Rand Water	0.0%	5.8%	8.8%
Sedibeng Water	0.0%	15.9%	6.6%
Umgeni Water	0.0%	27.6%	3.7%
Weighted average[20]	0.0%	10.6%	7.8%
CPI	2.2%	4.9%	7.4%

Source: Personal communication, James Matsie, SALGA.

Despite inputs from SALGA suggesting revisions to tariff increases proposed by the water boards, the Department of Water and Sanitation has in most cases simply approved the tariff increases requested by water boards – or approved zero increases across the board, as in 2020/21. This suggests an inadequate capacity to regulate these tariffs.

[20] Weighted according to anticipated sales volumes in 2022/23. 58% of sales are by Rand Water and 20% by Umgeni Water. The share of the other water boards in sales is 5% or less, with Overberg notably the smallest, selling only 0.1% of total sales.

3.5 Electricity[21]

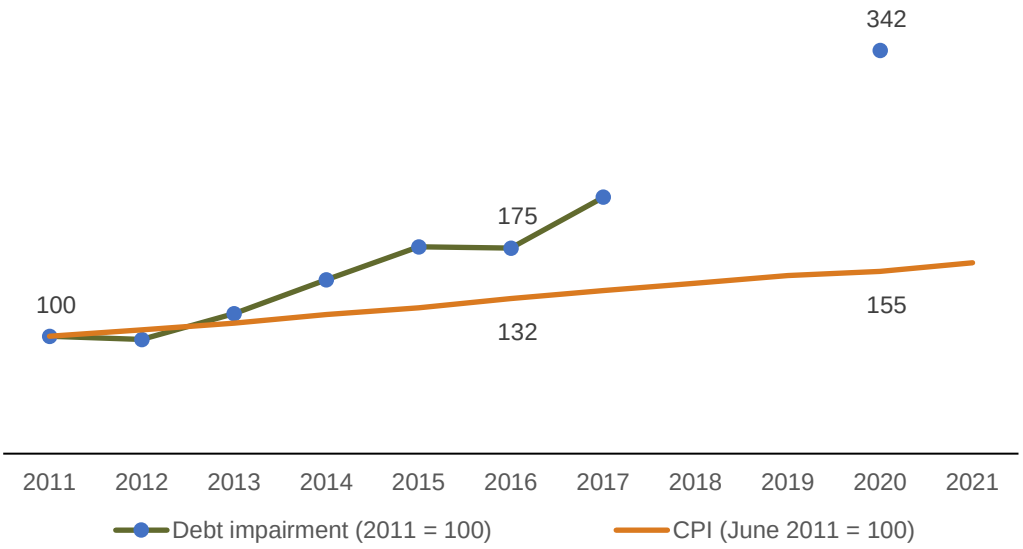
Electricity is a key input for treating bulk water to potable standards. Water boards report that electricity makes up between 13% and 26% of their total budgeted expenditures for producing bulk water for 2022/23 (Palmer Development Group analysis of water board budget data). Given the share of bulk water purchases in total water expenditures, electricity contributes about 5% to 15% of the total cost of water supply.[22]

While the cost of electricity is a relatively small portion of the total cost, it has increased significantly over the past 10 years and is a key driver of inflation in water prices. WSAs can do little to mitigate this beyond ensuring that their water pumping and treatment are as energy efficient as possible.

3.6 Debt impairment

Municipalities report on an accrual basis, reporting revenues when they are billed, not when they are paid. Debt impairment is a non-cash expenditure item used to make provision for the fact that some billed revenue will have to be written off. As shown in Figure 7, debt impairment expenditure has been growing more rapidly than CPI since 2013 and very rapidly since 2016.

Figure 7: Growth in debt impairment expenditure by all municipalities combined compared to growth in CPI between 2011 and 2021



Source: Author's analysis of municipal expenditure data from National Treasury MBRR AA tables for all municipalities combined for 2015, 2018 and 2021 MTREFs; CPI y-o-y for June each year as reported by Stats SA.

21 Most electricity expenditure incurred in providing water is associated with pumping and treating bulk water. For those municipalities that receive water from a water board, most electricity expenditure is therefore incurred by the water board and not the municipality itself. For municipalities that treat their own bulk water, the electricity cost reflects on the municipal account.

22 These percentages are very variable given the significant differences in the overall cost structures of water supply in different municipalities.

As reported in the 2022 iteration of the State of City Finances report, debt impairment expenditure in the eight metros and Msunduzi Local Municipality as a group increased by 42% from 2019 to 2020. This was the most significant single impact on municipal finances to result from the COVID-19 pandemic. In many municipalities, councils halted debt collection and credit control measures entirely during the pandemic, and data reported by the Financial and Fiscal Commission (2021) show that cash collection rates declined by between 5% and 10% across all municipal categories. Data suggest that debt impairment declined marginally in 2021 but remained high. The extent to which municipalities will be able to reintroduce credit control mechanisms and improve cash collection rates (and therefore reduce the need for debt impairment) going forward is unknown.

Debt impairment is an expenditure item for municipalities, and tariffs must be increased to cover this. This can result in a dangerous downward spiral: customers do not pay, so debt impairment rises, tariffs increase and become less affordable, and levels of non-payment rise further.

3.7 Asset management

Asset management here refers to both the operating and capital expenditures required to invest in new assets to allow for growth and to ensure that existing assets remain in sufficiently good condition to continue to provide services. Sound asset management requires adequate operating expenditure for the maintenance of assets and capital expenditure for both new assets and the renewal of existing assets. There is ample evidence of inadequate asset management by South African municipalities, including of water assets.[23]

Under-expenditure on the expansion, maintenance and renewal of assets means that this has not been a significant driver of inflation in water prices over the past 10 years, but this under-expenditure has taken its toll on infrastructure. The under-maintenance of assets results in a decline in asset condition and increases the need for higher levels of unplanned maintenance and asset replacement. Historic under-investment in asset management is thus anticipated to be a key driver of the need to increase water prices in future to allow for ongoing expansion, maintenance and renewal, and to make up for the significant backlog that now exists in these expenditures.

[23] The South African Institute for Civil Engineering Infrastructure Report Card for 2017 gave bulk water resources infrastructure and water supply infrastructure in non-urban areas a D- score, indicating that the infrastructure was at risk of failure. Water supply infrastructure in urban areas received a C+ score, indicating 'satisfactory for now' (Pautz et al. 2017). The report highlighted that budgeting and spending on maintenance, rehabilitation and expansion remained inadequate. The Auditor General made specific findings related to the state of municipal infrastructure in his consolidated report on local government in 2020. Data from the 2019 General Household Survey conducted by Stats SA showed that a quarter of South Africans (25%) reported some interruptions to their water supply in that year (interruptions being defined as lasting more than two days, or shorter interruptions experienced on more than 15 days in the previous year).

3.8 Non-revenue water

Non-revenue water (NRW) is the difference between the volume of water purchased from a water board as raw water and the volume of water sold to customers. NRW comprises so-called 'technical' losses, which are losses due to factors such as leaks or burst pipes, and non-technical losses, which are due to unidentified or misallocated water use or inaccuracies in recording water use. Technical losses are often related to infrastructure condition, while non-technical losses include water theft and water provided to customers free of charge.

The last rigorous analysis of South African NRW was by McKenzie et al. in 2012. This analysis found that the average level of NRW in South Africa at the time was 36.8%, which was not far off the world average, but that the best-performing countries had NRW levels of 7% or 8%.

Reporting by municipalities on NRW is inconsistent, but some data are included in the notes to their annual financial statements. Where available, these data are shown for the metropolitan municipalities in Table 4.

Table 4: Non-revenue water percentages in the eight metros in 2011, 2016 and 2021[24]

	2010/11	2015/16	2020/21
Johannesburg	39.1%	22.6%	39.4%
Cape Town	22.2%	12.8%	15.9%
eThekwini		40.7%	48.9%
Ekurhuleni	29.6%	34.0%	32.7%
Tshwane			34.6%
Nelson Mandela Bay	26.2%	41.4%	40.0%
Mangaung			
Buffalo City		41.0%	36.3%

Source: Notes to city annual financial statements 2010/11, 2015/16 and 2020/21.

The data indicate that levels of NRW have remained high and increased substantially in some metros. Increasing levels of NRW are a driver of inflation in water prices, as they increase the volume of bulk water that must be purchased or treated and decrease the volume of water sold, meaning costs must be recovered from a smaller sales volume.

4. Reforms currently under way through Operation Vulindlela

Before turning to recommendations, it is important to note that several reforms are currently being implemented through Operation Vulindlela[25] that relate to water pricing (National Treasury 2020):

- **Strengthening regulation of water pricing and service standards** by reviving Green Drop, Blue Drop and No-Drop water quality monitoring programmes and establishing an independent economic regulator. The latter is intended to "ensure

[24] Blank entries indicate data not available in the annual financial statements in that year.

[25] Operation Vulindlela is a joint initiative of the Presidency and National Treasury aimed at fast-tracking the delivery of economic reforms.

rational pricing" of water. Progress reporting at the time of writing indicates that this was "underway" (National Treasury 2022).

- **Finalise and implement the revised raw water pricing strategy** to "ensure accurate and fair water pricing according to the user-pays principle" (National Treasury 2022). The revised strategy was published in August 2022.
- **Address institutional efficiencies in municipal water and sanitation services** by implementing a comprehensive national programme to support municipalities in improving water services performance. This is relevant to water pricing, as this intervention's problem statement includes weak revenue collection and asset management, both mentioned as inflation drivers in this report. Progress reporting indicates that this will be achieved by, among other things, "providing hands-on support directly to municipalities that fail to meet (more comprehensive) norms and standards for water and sanitation" (National Treasury 2022). This latter is a significant task, but there has been little observable progress to date.

5. Recommendations

The **strengthening of economic regulation** of water pricing is a key requirement for improved water pricing and is currently being addressed through Operation Vulindlela. In particular, it is recommended that guidelines be developed for setting bulk water prices and that the regulation of these prices be improved.

It is also recommended that a **publicly accessible database of water tariffs** be established to allow for the transparent comparison of tariffs between municipalities and over time.

Economic regulation can be supported by introducing a **requirement for separate financial reporting** for each municipal trading service, including water. This will allow for a better understanding of changes in cost drivers for the water service in isolation from other municipal functions. Such separate financial reporting should include an allocation of municipal overheads to the water service.[26]

With regard to inflation drivers for retail water tariffs:

- Municipalities must be supported to **contain employee-related costs** as a matter of urgency.
- Municipalities must reintroduce debt collection and credit control measures and **contain increases in debt impairment**. This must be accompanied by careful indigent management to ensure that subsidies are accurately targeted to those that need them.
- Municipalities must **contain and reduce the levels of non-revenue water**. This may require up-front funding support linked to sound asset management (discussed below).

[26] Note that this recommendation does not suggest that cross-subsidisation between the water service and other municipal services should be eliminated. It suggests only that financial reporting should be clearly ring-fenced so that the level of cross-subsidisation is made more explicit.

- Funding freed up through these interventions should be directed to **improved asset management**, particularly the maintenance and renewal of infrastructure, to ensure that it remains in adequate condition to provide services on a sustainable basis.

Many of these interventions, particularly those related to employee-related costs and debt collection and credit control, are likely to face resistance and require strong political support.

References

Banerjee, S, Foster, V, Ying, Y, Skilling, H and Wodon, Q. 2010. 'Cost recovery, equity, and efficiency in water tariffs evidence from African utilities'. Policy Research Working Paper, WPS5384. World Bank Group.

City of Cape Town. 2020. 'Our shared water future: Cape Town's water strategy'. In *Cape Town's water strategy*. http://resource.capetown.gov.za/documentcentre/Documents/City strategies%2C plans and frameworks/Cape Town Water Strategy.pdf.

De Albuquerque, C and Roaf, V. 2020. 'The human rights to water and sanitation'. *Research handbook on economic, social and cultural rights as human rights*, edited by J Dugard, B Porter, D Ikawa and L Chenwi (Cheltenham: Edgar Elgar). 202–226.

Financial and Fiscal Commission. 2021. 'FFC submission for the 2022/23 division of revenue'. www.ffc.co.za.

Fjeldstad, O H. 2004. 'What's trust got to do with it? Non-payment of service charges in local authorities in South Africa'. *Journal of Modern African Studies* 42(4): 539–562.

Global Water Intelligence. 2018. 'The global water tariff survey'. https://www.globalwaterintel.com/products-and-services/market-research-reports/tariff-survey.

GWI. 2020. 'The global water tariff survey: the global value of water'. https://infogram.com/1pe2vnzrdwk9kjimjvd233d6xnuljzd3nzj?live.

Mazibuko, L. 2006. 'Founding affidavit in the matter of Mazibuko and others versus the City of Johannesburg, Johannesburg Water and the Minister of Water Affairs and Forestry'.

McKenzie, R, Siqalaba, Z and Wegelin, W. 2012. 'The state of non-revenue water in South Africa (2012)'. Water Research Commission Report no. TT 522/12.

National Treasury. 2019. 'Assessment of municipal tariff setting to inform credible tariff modelling for municipalities. Unpublished research report.

National Treasury. 2020. 'Operation Vulindlela: summary booklet'.

http://www.treasury.gov.za/Operation Vulindlela Summary Booklet March 2021.pdf.

National Treasury. 2022. 'Operation Vulindlela: progress update 2022/23: Q2 report'.

https://www.treasury.gov.za/comm_media/press/2022/2022080501%20Operation%20Vulindlela%20Progress%20Update%20Q2%202022.pdf.

Pautz, M, Wall, K and Amod, S. 2017. 'South African infrastructure report card 2017'. https://saice.org.za/wp-content/uploads/2017/09/SAICE-IRC-2017.pdf.

South African Cities Network (SACN). 2020. *State of city finances 2020*. https://www.sacities.net/wp-content/uploads/2021/03/SOCF-2020-Report.pdf.

ACN. 2022. *State of city finances 2022*. https://www.sacities.net/wp-content/uploads/2022/11/SoCF-Report-2022_WEB-72dpi.pdf.

Statistics South Africa (Stats SA). 2015. 'Municipalities experience a rise in employee-related costs'. https://www.statssa.gov.za/?p=4888.

Stats SA. 2019. 'General household survey: 2019'. https://www.statssa.gov.za/publications/P0318/P03182019.pdf.

Yates, S, Kruger, A, Yaari, E A, Mpakama, Z, Baloyi, X, Menouer, L and Earle, A. 2020. 'Water tariffing: what's at stake?'. https://www.siwi.org/wp-content/uploads/2020/03/AEWPP_-Water-Tariffing-2020_WEBB.pdf.

Annexure

Tariff structure definitions and example

WSAs charge different tariffs for different customer types. It is not unusual for a WSA to have 20 or more water tariffs in place in a particular year. The structure of these tariffs differs, meaning that customers on the same tariff may pay a different average price per kilolitre of water consumed.

A range of approaches to structuring tariffs is used among WSAs: some charge fixed charges and some do not; different sizes are used for the blocks in an inclining block tariff (IBT); and different structures are applied for industrial, commercial and institutional tariffs. Domestic water tariffs are most commonly structured as a fixed charge together with an IBT, while industrial, commercial and institutional tariffs are typically flat-rate tariffs.

A **fixed charge** is a fixed monthly amount charged to a customer regardless of the volume of water consumed. It may vary according to the size of the connection (in other words, it may vary from customer to customer), but it remains fixed for each customer over a municipal financial year.

A **flat rate** is a volumetric tariff. It is a price per kilolitre that does not vary with the volume of water consumed.

An **IBT** is a volumetric tariff structure. It is a price per kilolitre of water consumed that increases as the volume consumed increases. It is structured in 'blocks', with each block covering a range of consumption at an increasing rate.

Applying an IBT means that the average cost per kilolitre charged to a domestic customer that uses a large volume of water is greater than that for a customer who uses a small volume. However, the inclusion of the fixed charge can reverse this effect at low volumes consumed.

Example of water tariffs in the City of Cape Town in 2020/21
The domestic water tariff in the City of Cape Town in 2020/21 was structured as follows: A fixed monthly charge of R70.66. A price of R17.37 per kl for up to 6 kl of water consumed. A price of R23.87 for water consumed in excess of 6 kl, up to 10.5 kl. A price of R32.43 for water consumed in excess of 10.5 kl, up to 35 kl. A price of R59.85 for water consumed in excess of 35 kl. The bill for a **domestic customer using 6 kl of water** would be R70.66 + 6 kl x R17.37 = R174.88. The average price per kl for this customer is **R29.15**. The bill for a **domestic customer using 15 kl of water** would be R70.66 + 6 kl x R17.37 + 4 kl x R23.87 + 5 kl x R32.43 = R432.51. The average price per kl for this customer is **R28.83**.

Example of water tariffs in the City of Cape Town in 2020/21

The bill for a **domestic customer using 40 kl of water** would be R70.66 + 6 kl x R17.37 + 4 kl x R23.87 + 25 kl x R32.43 + 5 kl x R59.85 = R1 380.36. The average price per kl for this customer is **R34.51**.

Indigent households did not pay the fixed monthly charge, nor were they charged for any water up to 10.5 kl. **Indigent households consuming 6 kl, 15 kl and 40 kl** of water thus paid average prices of **R0.00 per kl, R9.73 per kl and R27.34 per kl respectively**.

Commercial and industrial customers paid a 'flat rate' tariff of **R31.10 per kl** regardless of volume consumed. The same tariff was charged to schools, sports bodies, religious institutions and charities.

In sum, the 'price' of water to a customer in Cape Town ranged from zero to over R30 per kl depending on the type of customer and the volume of water consumed.

WSAs typically increase the fixed and volumetric charges by the same percentage each year, but this is not always the case. They may increase the fixed charge by a larger or smaller percentage; they may apply different percentage increases to different tariff blocks within an IBT structure; they may apply different percentage increases to different customer types. Occasionally, they restructure the tariffs entirely, introducing or removing fixed charges or changing the sizes of blocks in an IBT. All these changes will affect the average price per kilolitre.

To overcome these difficulties, water prices are typically compared using one of two methods. The first method is to calculate the average tariff for the whole WSA. This is done by dividing the total revenue generated by all water tariffs by the total volume of water sold. This requires data on tariff revenues and sales volumes, but the latter are not readily available in South Africa. The second method is to compare the price per kilolitre for a selected customer type and level of consumption – for example, to compare the price of 15 kl of water to a domestic customer between WSAs or over time.

Special OBEN 2301* – July 2023

Review of administered prices in South Africa: The petrol price

Zaakirah Ismail and Christopher Wood

Abstract

Fuels costs are a key driver of inflation, both directly through transport costs and indirectly through their role in producing essential goods. Over the past decade, administered elements have accounted for between 40% and 60% of the final retail petrol price. The most important drivers of fuel price inflation have been the fuel levy, retail price margins and the Road Accident Fund (RAF) levy. The methodology for calculating retail price margins can be substantially improved, particularly by reducing excessive owner margins. The RAF levy is much more complex to solve, requiring a reform of the national approach to third-party insurance – but this reform is increasingly justified. Meaningful reductions in the fuel levy seem unlikely, given severe constraints on the fiscus and rising road maintenance costs.

1. Introduction

The cost of fuel is an important driver of inflation, and a pressing concern given ongoing disruptions to the hydrocarbon global market. Fuel plays a central role in meeting basic needs, such as food and transportation, which means that fuel price inflation can be a key driver of wage inflation. Even short-term volatility can trigger stubborn inflation as wages and prices rush to adjust to global price shocks.

South Africa's position as a net importer of petroleum means the country is a price taker in global fuel markets, and that most of the volatility in domestic retail petrol prices results from global price movements that are beyond local control. Despite this, South Africa's administered price regime means that a significant portion of the price for domestic fuels is determined by a complex mix of taxes, levies and cost margins. Over the past decade, cost elements beyond the basic fuel price have typically accounted for between 40% and 60% of the total retail price of petrol (Department of Mineral Resources and Energy (DMRE) 2022a).

While the basic fuel price remains the key driver of both volatility and inflation in the overall petrol price, administrative prices have played an important role in overall fuel price inflation. Key components of the fuel price have risen notably in recent years, with the retail margin, Road Accident Fund (RAF) levy and transport cost components increasing by 40%, 44% and 49% respectively in real terms over the 10 years to November 2022 (DMRE 2022a).

*The views expressed in these Special Economic Notes are those of the author(s) and should not be attributed to the South African Reserve Bank or South African Reserve Bank policy. While every precaution is taken to ensure the accuracy of information, the South African Reserve Bank shall not be liable to any person for inaccurate information, omissions or opinions contained herein.

These price increases are the result of a combination of deliberate policy choices, institutional failures (particularly in the case of the RAF), real price and capacity changes in the broader economy, and the specific methodological choices made by the prices-setters at the DMRE. Reducing these prices is complex, because they are linked to key social considerations such as the viability of road accident insurance and the well-being of over 70 000 forecourt employees working at petrol stations (Statistics South Africa (Stats SA) 2022a). The ubiquity of fuel as an economic input means that trade-offs in the fuel price are particularly high – with each 10c/litre increase in the fuel price costing the economy just over a billion rand per year – and areas for improvement must be constantly reviewed (DMRE 2021).

At least four opportunities exist to improve the efficiency of price-setting mechanisms in the domestic fuel price:

- Review the methodology for calculating retail margins and reconsider proposals to move the petrol price to a maximum (rather than regulated) price.
- Review the viability of the RAF against alternative approaches, notably compulsory third-party insurance.
- Review the methodology for calculating inland transport costs.
- Update several outdated elements of the basic fuel price calculation.

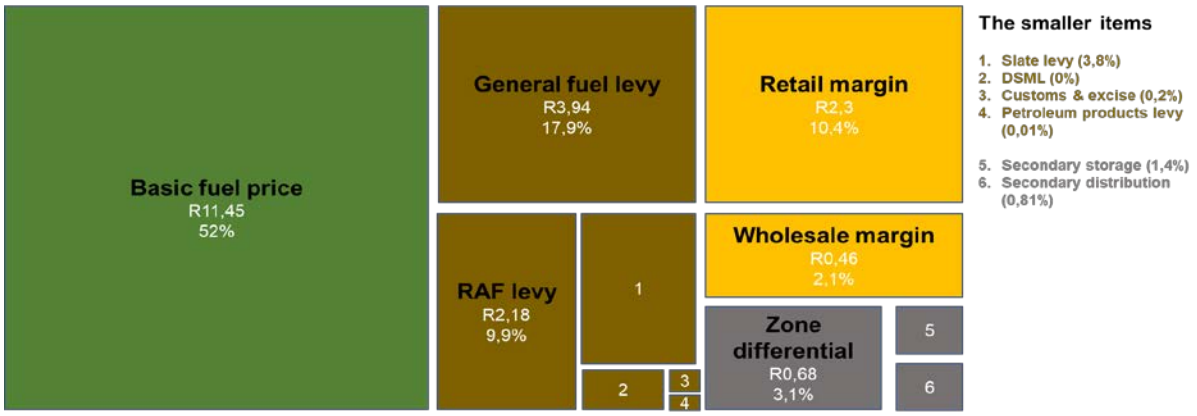
This economic note explores these issues in three parts. Section 2 provides a breakdown of the fuel price calculation. Section 3 examines trends in fuel price inflation. Section 4 focuses on the drivers of inflation among administered elements of the fuel by price, examines the underlying challenges, and proposes potential opportunities to improve the efficiency of the fuel price system.

2. Price structure

2.1 Basic fuel price

South Africa's petrol price is an aggregation of the elements shown in Figure 1. The basic fuel price, which is mostly determined by global market prices outside of South Africa's control, forms the largest part of the underlying fuel price.

Figure 1: Petrol price breakdown[1]



Source: Department of Energy, 2022; author's own calculations.

While the basic fuel price is mostly market-related, and thus largely beyond the scope of this note, the way it is administered is nevertheless important for two reasons.

First, the basic fuel price itself comprises a relatively complex set of assumptions and calculations, as outlined in Table 1, some of which require additional scrutiny. These assumptions are more complex to assess, largely because the DMRE doesn't regularly publish detailed breakdowns of the basic fuel price calculations in the same manner as it does for the remainder of the fuel price methodology, which means that challenges can only be abstractly gleaned from the methodology itself.

Table 1: Methodology for calculating the basic fuel price, with unit costs and cost to economy

Cost	Methodology	Price, Nov 2019, c/l	Cost to economy, 2019, R million
Free-on board (FOB) values	FOB export values for export-oriented refining centres in the Mediterranean, Gulf and Singapore	587.146	58 714.6
Freight	As published by London Tanker Brokers Panel on 1 Jan each year, adjusted for risk and supply/demand of ships using the Average Freight Rate Assessment	21.002	2 100.2
Demurrage	As published by the World Scale Association, with total demurrage time limited to 3 days	0.632	63.2
Insurance and other fees	0.15% of FOB value and freight	0.913	91.3
Ocean loss	0.3% of FOB value, freight and insurance	1.829	182.9
Cargo dues	Based on tariff provided by National Ports Authority	2.648	264.8
Coastal storage	Based on average international storage rate in 2012, adjusted by producer price index annually	3.603	360.3
Stock financing costs	Calculated at 25 days of stockholding on landed cost values for refined petroleum, at prime minus 2%	2.890	289.0

Source: DMRE, multiple sources for methodology (DMRE 2022b), 2019 price (DMRE 2019) and total petrol consumption in 2019 (DMRE 2021).

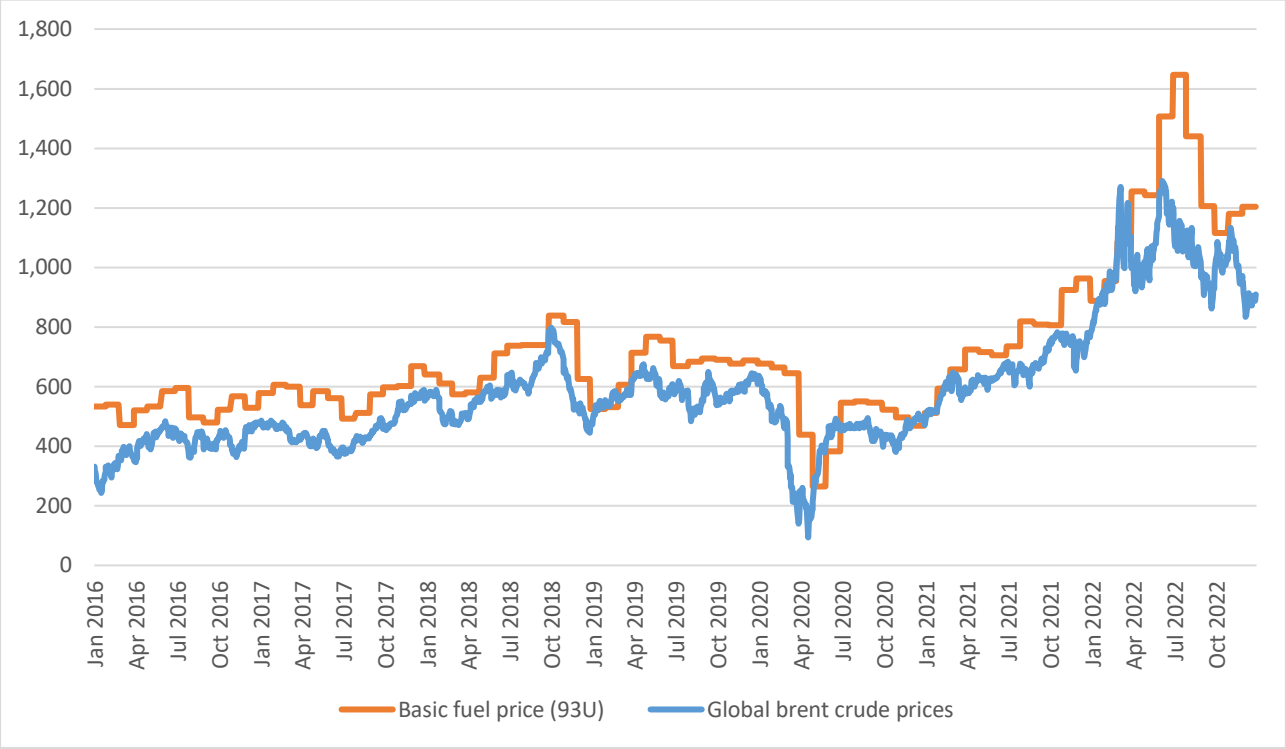
[1] Department of Energy website: Accessed October 2022 and based on October 2022 petrol Unleaded 95 prices.

Although limited, the available information suggests that a number of improvements are possible. For example, the DMRE methodology for calculating coastal storage costs is based on an outdated base estimate, with the values for costs based on a 2012 study of global average storage costs, which is inflated by the producer price index for final manufactured goods each year (DMRE 2017). Given that South Africa has invested heavily in liquid fuel terminals at ports such as Saldanha Bay, the underlying price should reflect these structural changes in the industry, but almost certainly does not under the current methodology. Similarly, prices for insurance and ocean loss have not been updated since at least 2005, indicating that the basic fuel price could benefit from a more regularised and open process of revision in order to keep it cost reflective.

The second reason that it's important to consider how the basic fuel price is administered is the temporary lag in how it responds to changes in global petrol prices, given that prices are generally updated monthly. This is theoretically accounted for through the slate levy, but it is an imperfect solution because consumers purchase petrol at intervals that differ from the monthly adjustment, and could pay more or less than prevailing market prices based on when they have to refill their cars, particularly during periods of substantial price instability.

A global benchmarking exercise suggests that other markets update administered prices on a more regular basis than South Africa's monthly schedule, often releasing new prices every two weeks. Given that the calculation of the petrol price is a relatively mechanical process, it would be viable for the DMRE to increase the frequency with which prices are adjusted. This would require additional work on the part of retailers, but would improve the responsiveness of the fuel price and reduce the burden on the slate levy to adjust for short-term imbalances.

Figure 2: Basic fuel price vs brent crude price (2016–2022)



Source: DMRE, basic fuel price dataset (DMRE 2022c); FRED dataset on crude oil prices: Brent. Barrel to litre conversion based on DMRE conversion rates, 1 barrel = 42 gallons, 1 gallon = 3.8038 litres.

2.2 Fees, levies and margins

Realistically, the scope for addressing petrol price inflation by improving the basic fuel price calculation is more limited than that of addressing those price components more firmly under domestic control. Table 2 provides an overview of all fees, levies and margins in excess of the basic fuel price, and how they are calculated in the final petrol price.

Table 2: Methodology for calculating the petroleum price, with unit costs and cost to economy

Cost	Methodology	Price, Dec 2022, c/l	Cost to economy, 2022, R billion
Basic fuel price	As detailed in Table 1	1234.49	123 449
General fuel levy	Set by the Minister of Finance	394	39 400
Retail margin	Based on costs incurred by a benchmark service station	241.9	24 190
RAF levy	Set by the Minister of Finance	218	21 800
Slate	Calculated based on cumulative difference in sales prices between the set and daily basic fuel price, multiplied by the monthly fuel sales	83.28	8 328
Inland transport costs	Methodology not publicly available	67.9	6 790
Wholesale margin	15% of depreciated book values of assets, before tax and payment of interest, as outlined in Marketing of Petroleum Activities Return guidelines	56.6	5 660
Secondary storage	Methodology not publicly available	28.8	2 880
Secondary distribution	Methodology not publicly available	16.9	1 690
Customs and excise	Standard SARS levies	4	400
Petroleum products levy	Calculated to meet the annual budget of the Petroleum Pipelines Regulator	0.33	33
Equalisation fund	Currently not used. Set at a level to manage instability in petrol prices	0	0
Demand-side management	Set by the Minister of Energy, aims to discourage the use of 95 unleaded petrol in inland markets	0	0

Source: DMRE, multiple sources for methodology (DMRE 2022b), 2022 price (DMRE 2022a) and total petrol consumption (DMRE 2021).

The components of this administered segment of the petrol price broadly fall into three overlapping categories:

- A set of calculations that are meant to reflect the costs and profit margins of key distributors and retailers in the petrol value chain – this includes the distributor margin, a portion of the retail margin and a selection of transport costs.
- A set of levies and taxes – including the fuel levy and specific levies for the RAF and for the use of petroleum pipelines.

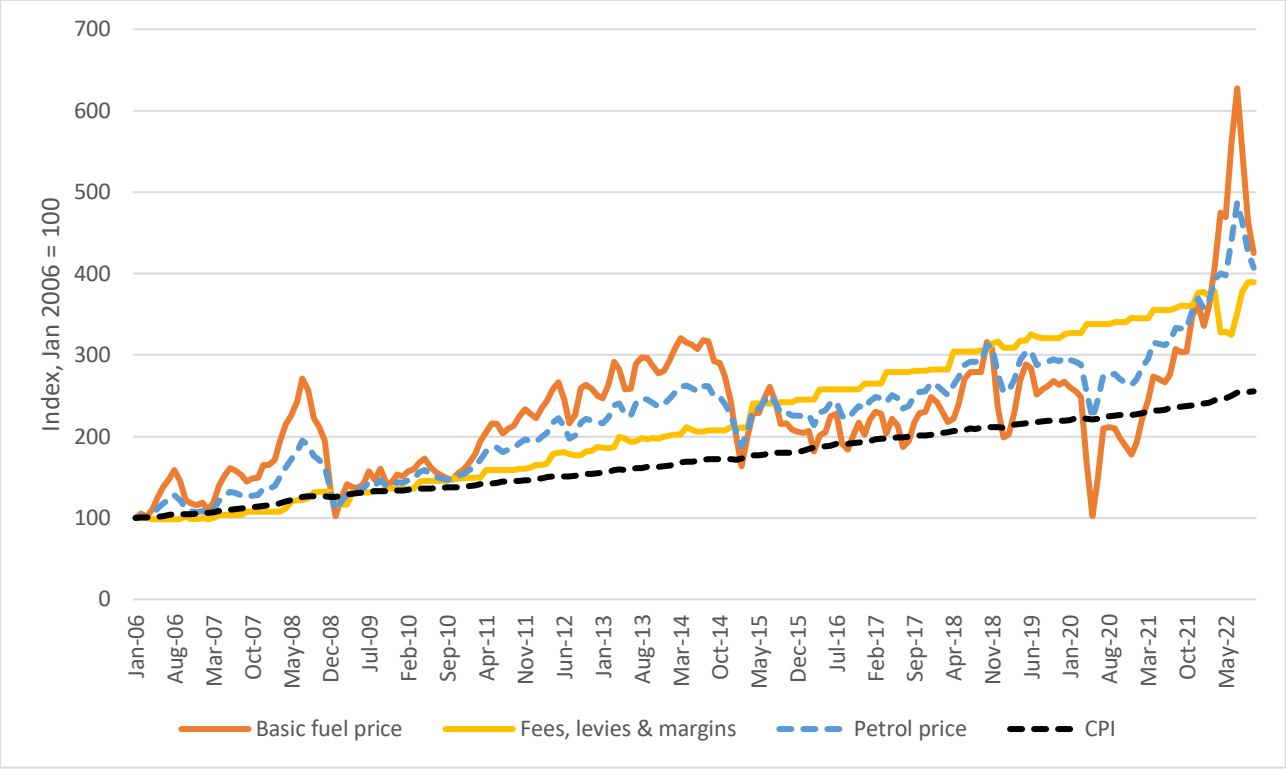
- Behavioural incentives that seek to account for a specific social consideration – and include the demand-side management levy, the equalisation fund (which is not currently used), and a portion of the retail margin (particularly the excess margin to maintain full-service, rather than self-service, petrol stations).

Decisions around these fees, levies and margins are mostly split between the Minister of Finance and the Minister of Energy. Except for the slate levy, components are typically updated once per year, although mid-year changes may occur.

3. Inflation trends

Growth in the basic fuel price and the administered component of the petrol price have exceeded headline CPI in all but the COVID-19 years, as shown in Figure 3.

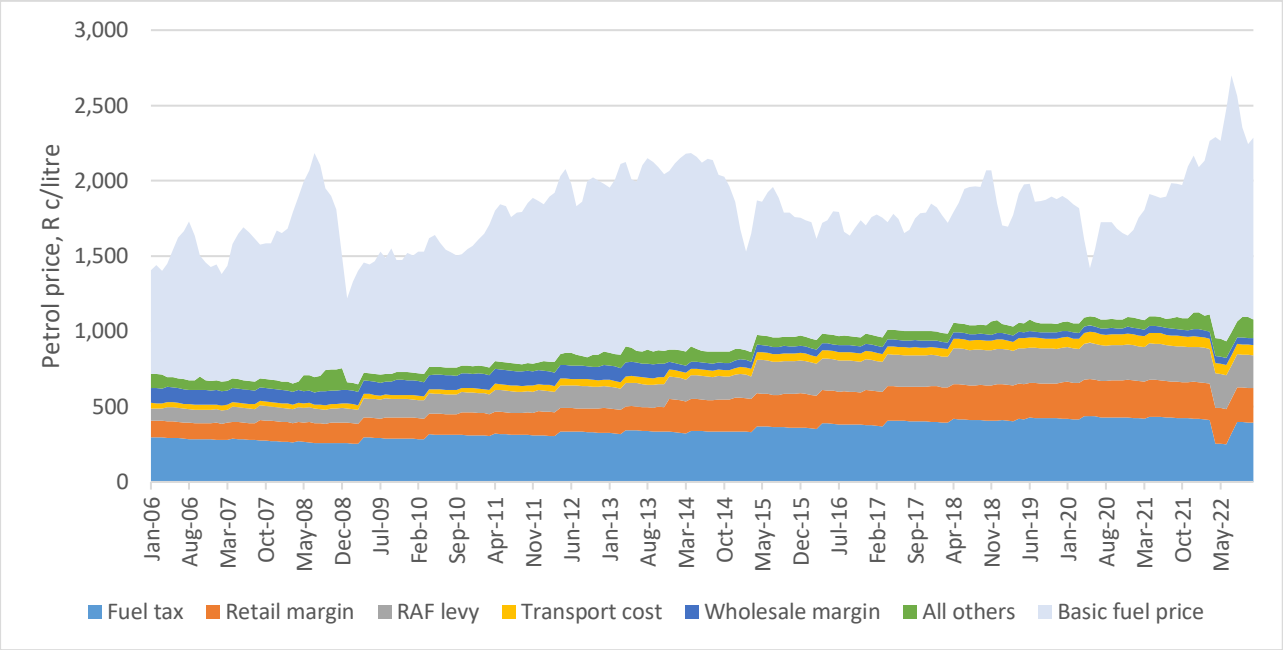
Figure 3: Price growth, basic fuel price vs fees, levies and margins (2006–2022)



Source: DMRE, dataset on petroleum 95 2022 price (DMRE 2022a); Stats SA CPI data.

Following a set of increases to key components in early 2015, administered prices have typically exceeded the basic fuel price as a share of the final petrol price. From January 2015 to March 2022 (after which the basic fuel price spiked as a result of global disruptions), administered prices were higher than the basic fuel price in all but one month.

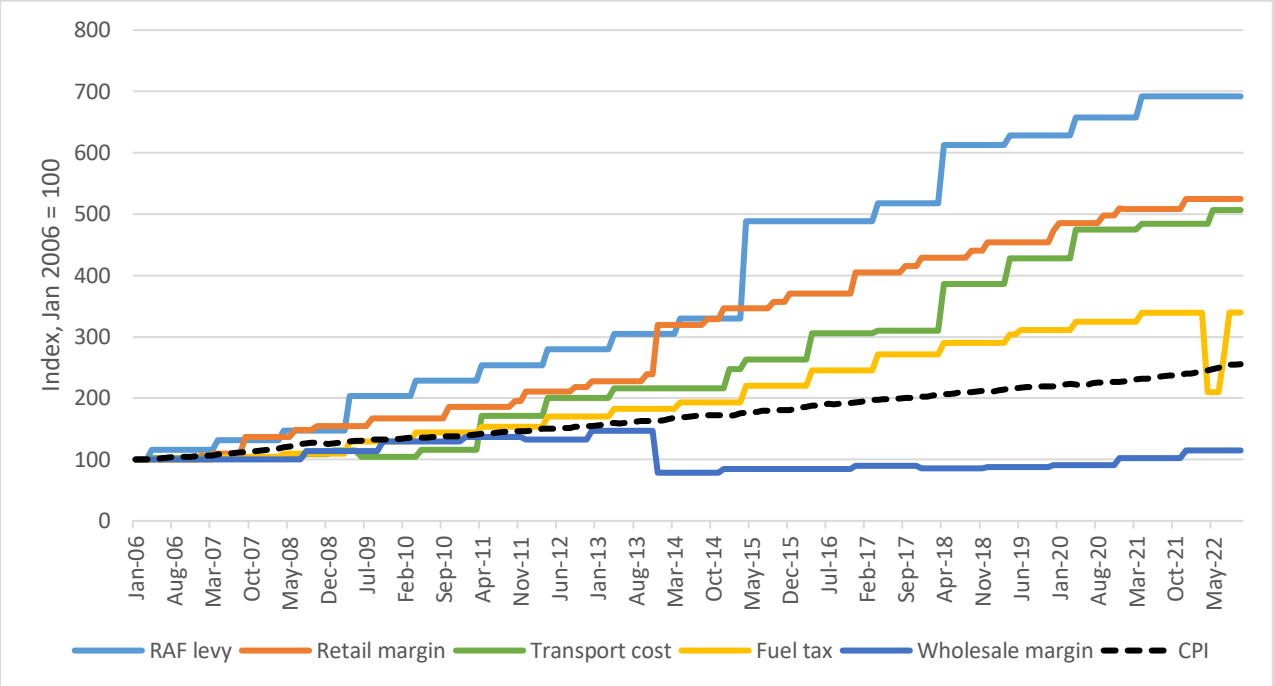
Figure 4: Components of the petrol price (2006–2022)



Source: DMRE, dataset on petroleum 95 2022 price (DMRE 2022a).

Disregarding the slate levy (which varies per month), three components account for 84% of the price increase seen in the administered portion of the petrol price over the last decade: the general fuel levy (37% of growth), the retail margin (34%) and the RAF levy (23%). The transport cost component, although a smaller contributor to growth (at 8%), has also grown quickly and deserves additional examination. These four inflation drivers are examined in depth in Section 3.

Figure 5: Index of price growth in select components of the petrol price (2006–2022)



Source: DMRE, dataset on the basic fuel price (DMRE. 2022c) and Stats SA (2022b).

4. Inflation drivers

4.1 Retail margins

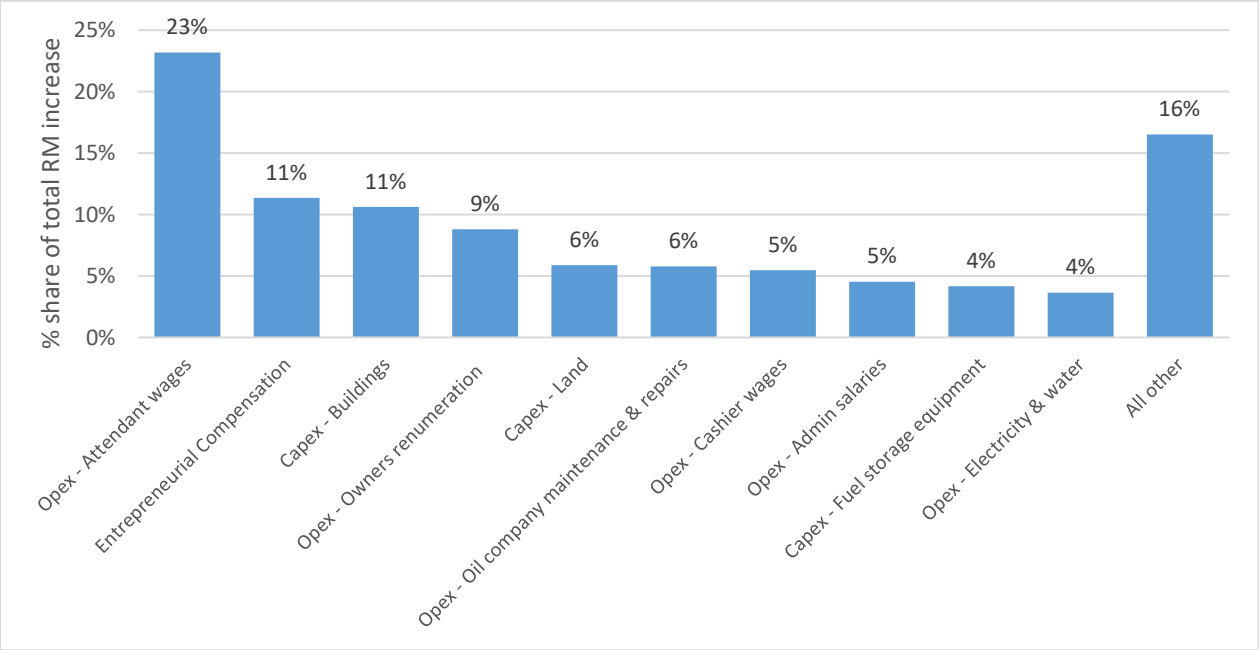
The retail margin has consistently been the most significant driver of fuel price inflation outside the basic fuel price and levies. Much of this inflationary pressure began after 2015, following the implementation of a significant change in the methodology for calculating retail margins.

Before 2015, retail margins were assessed through the retail margin determination model, as part of the broader Marketing of Petroleum Asset Retail methodology. The methodology effectively set a benchmark rate of return for all activities outside the refinery gate (including wholesale, retail and transport), locking returns in at between 10% and 20% of total assets, and then adjusting the margin if returns were higher or lower in the preceding year.

From 2015, this was replaced with the Regulatory Accounting System, which separated out individual margins for activities like retail and wholesale trade and aimed to reflect actual costs and sales volumes more closely. For the retail margin, this calculation is facilitated by a benchmark service station, which is meant to offer an indicative representation of costs facing an average petrol station. The benchmark service station matrix of costs and assets is primarily based on a 2009 survey, which is updated by components of the producer price index annually and should be revised regularly (although evidence suggests this is not the case) (Crompton et al. 2020). Full information on the methodology and the data underpinning it are not public, which makes it difficult to review the basis of the calculation in any detail.

However, evidence from publicly released matrices shows that all components of benchmark service station costs rose by more than headline CPI between 2015 and 2020, with the exception of two relatively fixed elements that account for evaporation and operational gains and losses (DMRE 2020, 2015). The greatest contributors to underlying cost increases appear to be wages and earnings for owners, with attendant wages growing particularly fast during this time, while basic capital expenditure costs like buildings, land and equipment also continue to rise.

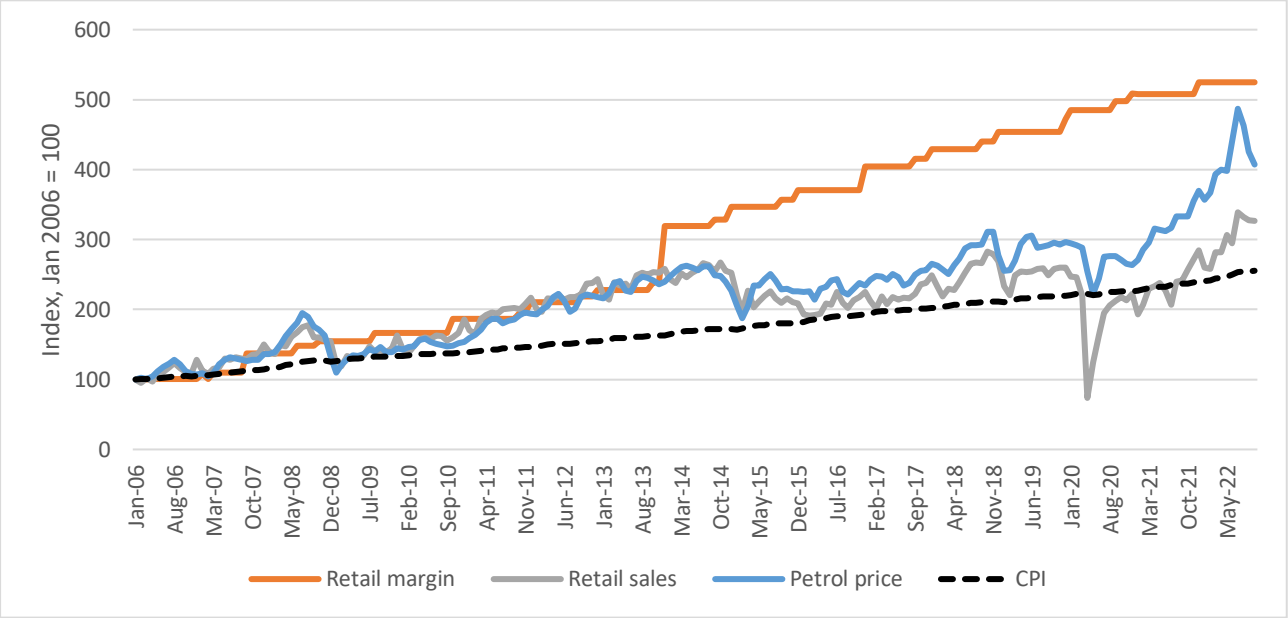
Figure 6: Cost drivers of retail margin (2015–2020)



Source: DMRE, benchmark service station matrices (DMRE 2020, 2015).

Much of this wage growth appears to result from the increasing number of retail employees, with little associated growth in sales. Over the same period indicated in Figure 6, forecourt employee numbers grew by 19% and cashier numbers grew by 52%, while sales volumes remained mostly stagnant. This appears to indicate either that employment is growing per service station, or that the number of low-volume stations expanded over the period.

Figure 7: Retail price margin vs retail petrol sales (2006–2022)



Source: Stats SA motor sales dataset (retail sales); DMRE petrol levies, taxes and margins dataset (retail margin, petrol price); Stats SA CPI dataset (CPI).

This wage growth is unusual in the global context, because most markets have self-pumping petrol stations. With attendant wages accounting for 44c of every litre filled (or 20% of the total retail margin), there is little question that switching to a self-service model would meaningfully reduce the petrol price. However, it would come at a steep social cost. As of 2022, more than 70 000 people were employed as forecourt attendants – an already substantial decline from pre-COVID employment of 108 000 (Stats SA 2022a). The sector is a key employer of those with less formal education; forecourt attendant is the 20th largest formal sector job for those without secondary education (Stats SA 2022a). With employment in retail petroleum sales already declining, the loss of margins for retail wages would risk triggering further job losses in the sector.

Given these considerations, three areas may offer the greatest scope to manage retail margin costs.

The first is to review the portion of the margin received by owners. At present, owners benefit from two sets of costs: owners renumeration (as part of their operating expenditure) and entrepreneurial compensation – a combination that could be seen as analogous to the owner receiving a wage and a dividend. Combined, owners take away a share of earnings that is larger per litre of petrol than total petrol attendant wages, with 21% of total retail margins accounted for by owner earnings.

While there needs to be an adequate incentive to encourage owners to invest in petrol stations, it is difficult to benchmark whether this is an appropriate return to offer owners. Crompton et al. (2020) estimate that the weighted average cost of capital calculation underpinning owner compensation is substantially overstated, at 27.47% against their calculation of 14.37%. They argue that the entrepreneurial compensation value should be reduced and the owners renumeration portion removed altogether. Few global benchmarks exist, although evidence from most markets indicates that owners make more on retail sales at petrol stations than on the sale of petrol (KPMG 2020). It appears that the retail margin may assume owners generate all revenue from the sale of petrol, which would suggest the margin is excessive.

This, however, points to a deeper problem in the retail methodology, which is a lack of transparency on the foundational logic and evidence behind the retail margin. It is unclear, for example, precisely what factors are used to calculate the entrepreneurial compensation element of retail prices, or why the owners' earnings are accounted for twice in the methodology.

This points to the second area for improvement, which is a more rigorous approach to calculating retail margins. At present, calculations seem to be based on an outdated survey, with relatively simplistic assumptions applied to adjust costs for inflation. Changes to some components are difficult to explain, and presumably result from a process of consultation with the industry. A more frequently applied and transparent process is needed to properly understand why the retail margin has grown so quickly.

One approach to achieve this would be to require mandatory annual disclosures of operating costs as part of the retailer's requirements under the Petroleum Products Act 120 of 1977.

This would add an administrative burden to the process, but would offer a much more reliable approach to understanding actual cost dynamics for retail firms. It would also allow for the development of more nuanced benchmark service stations.

The retail margin formula makes little distinction between the cost and earning structures of petrol stations in urban and rural areas; high- and low-traffic areas; whether leasing or owning their property; whether it is refiner, franchisee- or owner-owned; and a range of other factors. Reducing these complexities to a single benchmark station is where a lot of the inefficiency in the retail margin lies – but moving beyond this necessary simplification will require a better understanding of the retail firms this margin is supposed to serve.

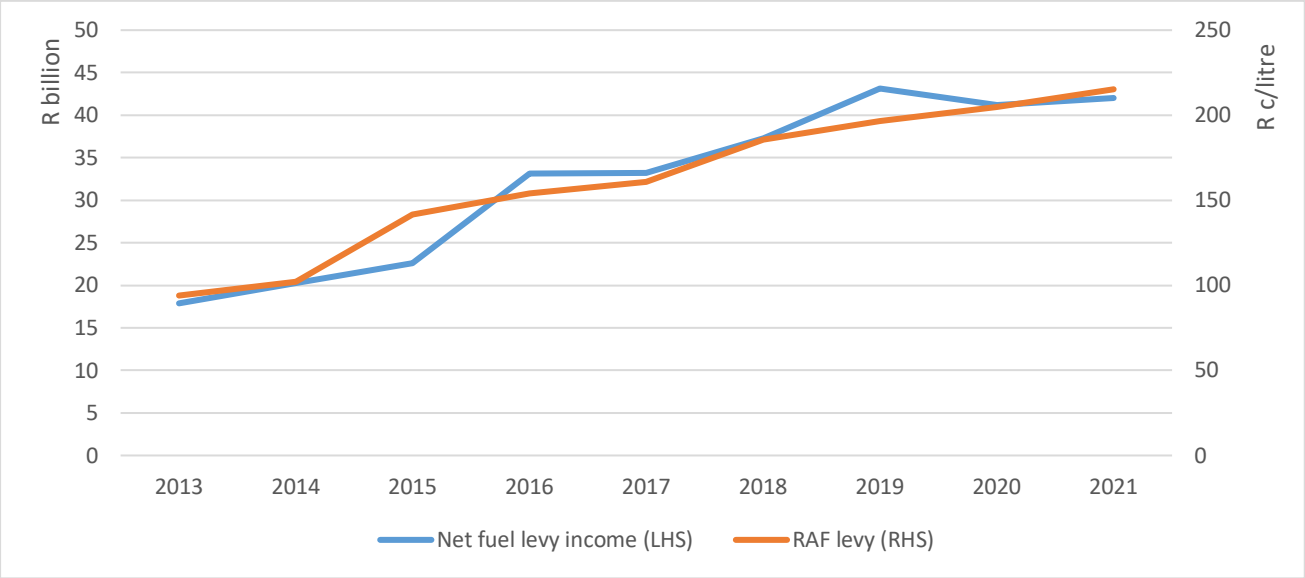
Finally, the third area of improvement in managing retail margin costs would be to implement the proposals made by the Department of Energy in 2018, which would reposition the regulated petrol price as a maximum price, allowing retailers to set prices below the petrol price. This would presumably be achieved by individual retailers discounting their margin, adding an element of competition that could account for failures in the retail margin calculations. Given the complexity of the retail petrol market, and the limits to the methodology detailed above, this may be the best available option to build a naturally correcting calculation for the retail margin.

4.2 Road Accident Fund levy

Perhaps the most unusual aspect of South Africa's fuel price is the Road Accident Fund (RAF) levy, which pays for public third-party road accident insurance. Few comparator schemes can be identified globally, as the more common model of managing costs associated with road accidents is to require mandatory third-party insurance for all drivers.

While high-quality data on South Africa's insurance coverage rates is not available, the figure frequently reported is that 70% of South African cars are uninsured (Automobile Association of South Africa 2020). Proponents of the RAF levy point to this insurance gap as a justification for the scheme, particularly given the high prevalence of road accidents in South Africa and their effect on pedestrians. The R42 billion raised by the levy in 2021 makes it among South Africa's largest social insurance schemes.

Figure 8: RAF fuel levy income vs fuel levy level (2013–2021)



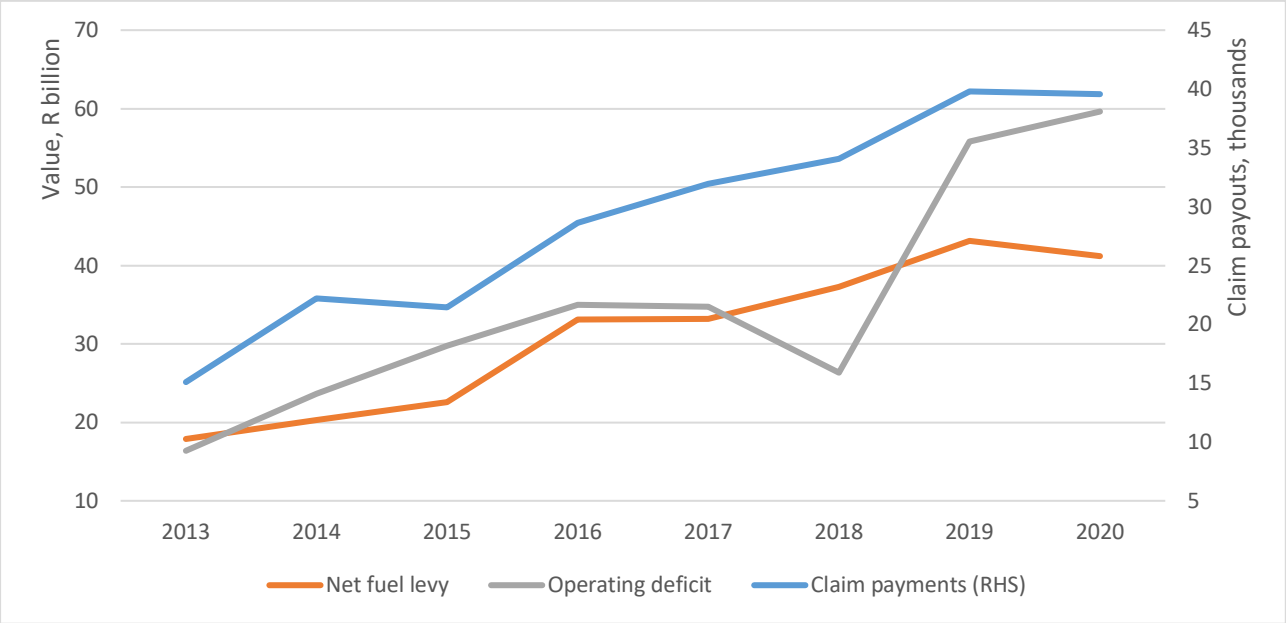
Source: RAF annual reports (net levy income), 2013–2021; DMRE petrol price margins (RAF levy).

Despite this, the rising cost of the RAF levy means that the additional cost to petrol prices has rapidly eroded the cost benefit for drivers relative to mandatory private insurance. For example, an online quote for third-party insurance for a Toyota Corolla returns prices ranging between R280 to R300 per month (based on a search in February 2023), whereas one full tank of petrol in the same car would pay about R109 in RAF levies. Whether the RAF is a net cost or benefit for most drivers would vary depending on the specifics of their vehicle, location and driving behaviour.

To examine this trade-off from another angle, the DMRE estimates that 10 billion litres of petrol were sold in the retail sector in South Africa in 2019, while NaTIS estimates that 7.7 million passenger vehicles were actively driven at the end of 2021. At this level of petrol consumption, the total RAF levy costs consumers R2 849 per car per year, meaning insurance would be, on average, a more competitive option if it could be offered at a rate of R237 per month. Of course, this average belies a great deal of complexity, in which those in higher-risk areas or who drive less often would likely face higher costs from insurance than from the RAF. But it does appear to indicate that the overall cost advantage of the RAF system relative to compulsory third-party insurance is rapidly closing.

The trade-offs between the RAF model and mandatory third-party insurance have been further complicated in recent years by the RAF's financial challenges. The RAF is severely indebted, with huge quantities of outstanding claims – the organisation's net liabilities in 2020 reached R320 billion (RAF 2020). Even with a rapidly increasing RAF levy, the fund's annual operating deficit has widened to R52 billion, and no practical expansion of the levy seems capable of stemming the organisation's eroding financial position. The RAF levy would have to more than double just to cover the fund's operating deficit in 2020.

Figure 9: RAF fuel levy income, operating deficit and claim payouts (2013–2020)



Source: RAF annual reports (net levy income).

The RAF contests that these claims and deficits overstate their liabilities, because it is only liable for funds equal to the value of fuel levy income (RAF 2022). Even if this is the case, it is effectively an admission that the fund's current funding model is not able to provide for all claimants and means that the RAF is a much more limited scheme than envisioned by the legislation.

The RAF likely has a role to play in filling gaps in insurance coverage. Rolling out mandatory third-party insurance would be complex and has historically been opposed by influential vested interests such as the taxi industry. However, as it stands, the RAF is an expensive and ineffective way to provide third-party cover and should be reviewed. Compulsory third-party accident insurance, alongside a much smaller RAF levy with narrower coverage, could be a viable option to reduce petrol price inflation relatively quickly. This would be a complex process and would require much more detailed analysis before a decision is made, but it is perhaps the most concrete option to consider when trying to stem fuel price inflation.

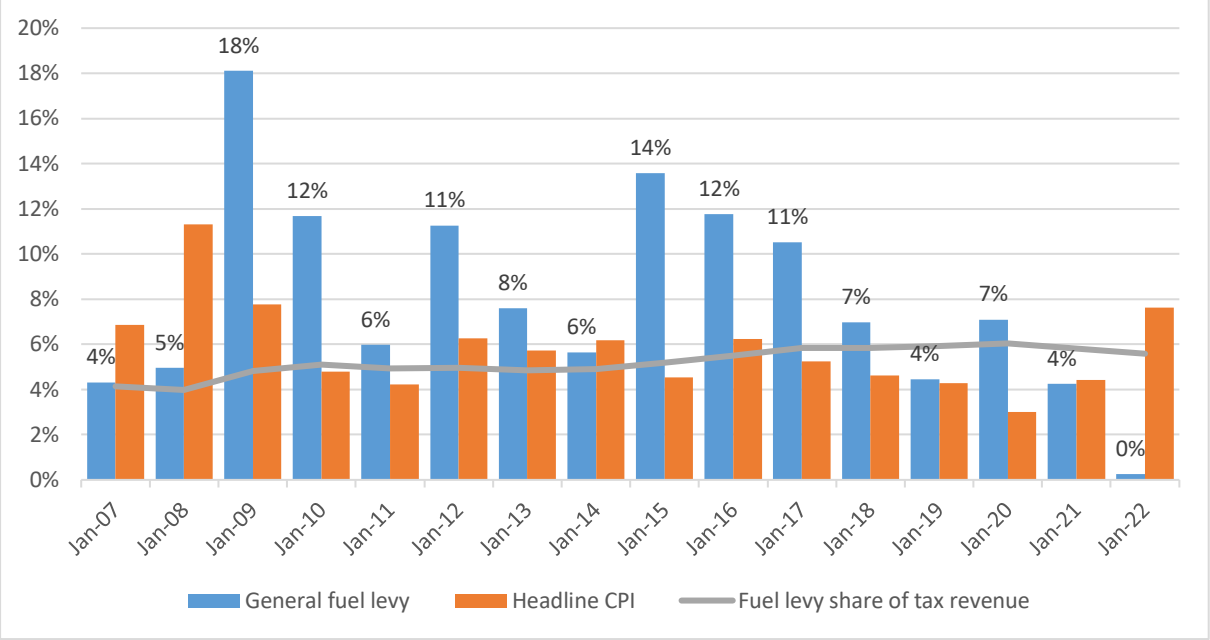
4.3 General fuel levy

The general fuel levy has been the single largest driver of administered price inflation in the petrol price over the last 10 years. This has primarily resulted from the challenging fiscal environment facing the South African government, and the need to find alternative sources of taxation to narrow a widening fiscal deficit. The fuel levy is the fourth largest source of government tax revenue, accounting for 5.8% of total tax revenue in 2021/22 (National Treasury 2022a).

As a result of these concerns, the Minister of Finance introduced an above-inflation increase in the general fuel levy for every year between 2009 and 2020, with the exception of 2014 (DMRE 2022a; Stats SA 2022b). More recently, the rate of these increases has slowed, with

an at-inflation increase in 2021 and a hold on increases in the fuel levy in 2022, accompanied by a temporary reduction in the levy between April and August 2022.

Figure 10: General fuel levy growth vs CPI

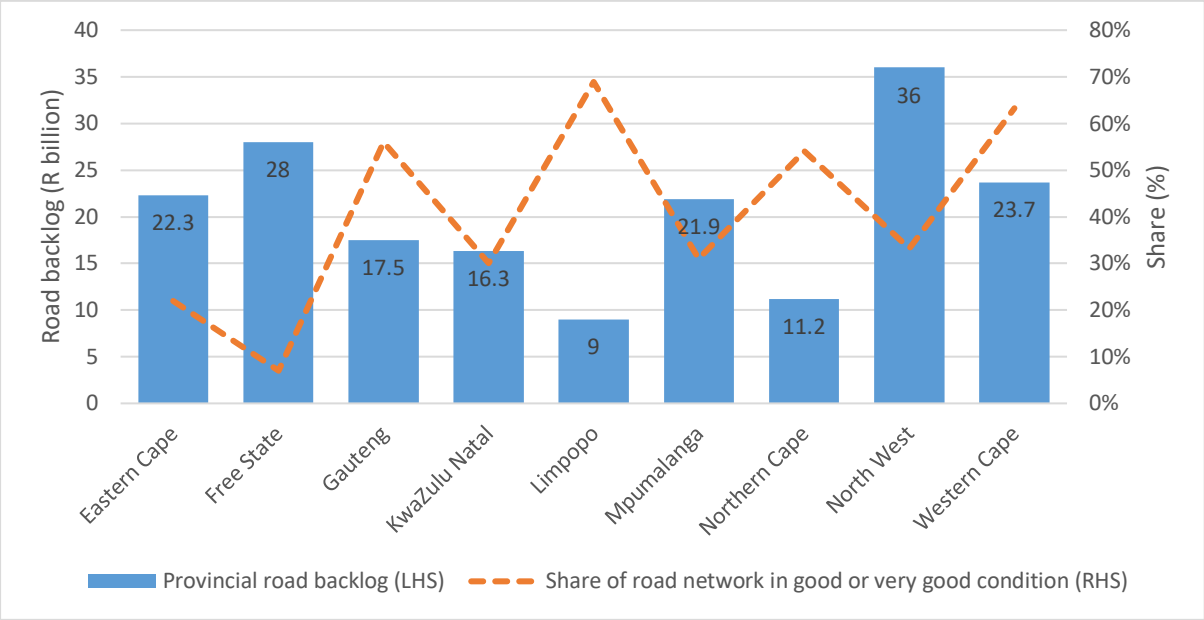


Source: DMRE petrol levies, taxes and margins dataset (retail margin, petrol price), Stats SA CPI dataset (CPI).

The fuel levy is collected into the National Revenue Fund, and is not technically ring-fenced. As such, it is meant to be distributed to a range of agencies and departments focused on road maintenance, and is considered alongside licence and toll fees as the central funding pillar of South Africa's road infrastructure (Department of Transport 2016). This distribution of funds is not mechanical and appears to result from a negotiated process between National Treasury, the Department of Transport, and key agencies like the South African National Roads Agency Limited. About 17% of fuel levy revenue is distributed to the eight metropolitan municipalities, announced annually, but the use of the remaining levy is more opaque (National Treasury 2022b).

The link between the fuel levy and road maintenance infrastructure complicates some of the considerations around the levy's increases. The poor state of road infrastructure imposes significant costs on both consumers and on general growth, and rebuilding from this degraded base can be up to 18 times more expensive than base road maintenance (National Treasury 2021). National Treasury estimates that backlogs on provincial roads alone will cost R186 billion to repair (National Treasury 2021).

Figure 11: Road infrastructure backlogs (2021)



Source: Intergovernmental Fiscal Review 2021 (National Treasury 2021).

Given the important role the fuel levy plays in plugging the fiscal deficit and tackling the poor state of logistics infrastructure, there are no easy solutions to lowering the levy in the absence of alternative fundraising mechanisms. With taxation already nearing the point of diminishing returns, and with funding tools like licensing fees seemingly having little room to expand, these alternatives do not appear promising.

Despite this, costs of the fuel levy remain high. Beyond the pure inflationary impact, continued increases are concerning because, like all product taxes, the fuel levy is regressive. While poorer South Africans are less likely to drive, they nevertheless feel the impact of these increases through transport costs. Globally, fuel levies are also considered regressive because poorer drivers tend to have older and therefore less fuel-efficient cars.

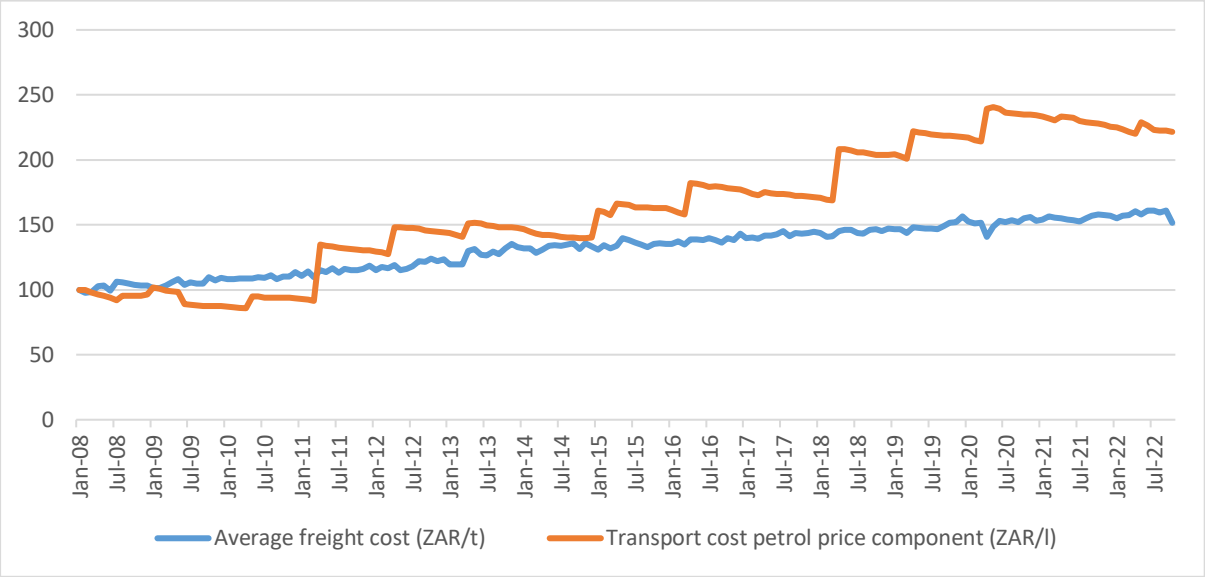
The fuel levy should be subject to more detailed review as part of any revision of the petrol price. However, for now, the scope for improvement on the fuel levy is much narrower than the retail margin or RAF levy, and seems less likely to offer price relief for consumers.

4.4 Transport costs

The transport costs component of the petrol price is smaller than the others listed above, but it does indicate how more marginal aspects of the price methodology have change rapidly with no obvious justification.

The transport costs element refers narrowly to domestic transport of refined petroleum, with international shipment costs falling under the basic fuel price, and storage and other associated wholesale costs dealt with in separate margins. While high-quality information on liquid fuels transport costs is not available, evidence from general freight costs indicates that the transport cost component has been rising significantly faster than market rates.

Figure 12: Average freight transport costs vs transport cost price component (2008–2022)



Source: Land transport survey; DMRE petrol levies, taxes and margins dataset.

The methodology for calculating transport costs is not publicly available and is perhaps the opaquest component of the petrol price. The DMRE has previously stated that transport costs are calculating by applying the "most cost-efficient mode of transport to determine primary transport cost implemented into fuel price structures", but no detail is available on how this is achieved (Department of Energy 2018).

There is little that can be said about the transport cost component. which indicates a continued lack of transparency in the petrol price calculation. This, combined with the rapid increases that appear out of step with the evidence, makes transport costs one of a number of components that require review and greater public scrutiny.

5. Conclusion

While global petrol prices are outside of South Africa's control, improvements to the administered components of the petrol price may offer some limited relief for consumers facing steep inflation. Seven elements have been identified as possible areas for reform, as outlined in Table 3. These interventions would require substantial additional review prior to implementation.

Table 3: Scoping of possible interventions

Component	Intervention	Potential impact
Retail margin	Consider transitioning the petrol price to a maximum price, rather than a regulated price	High
Retail margin	Review the entrepreneurial compensation and owner renumeration elements of the benchmark service station	Medium
Retail margin	Update the survey underpinning the benchmark service station and/or require mandatory annual disclosure of costs and assets by service stations	Low
RAF	Review the viability of compulsory third-party insurance as an alternative to the RAF	High
Transport costs	Publish and review the methodology for calculating inland transport costs	Low
Basic fuel price	Update the methodology for calculating insurance, coastal storage and ocean loss	Low
Basic fuel price	Increase the regularity of basic fuel price updates to every two weeks	Low

The Minister of Finance has indicated that a process is under way to review the petrol price, but none of these reforms are likely to be easy. The two reforms that could offer the most significant benefits – the review of the RAF system and the shift to a maximum petrol price – are also the most difficult, and would require significant additional evaluation work and weighing of large, vested interests. With global fuel markets entering a period of protracted instability, even marginal improvements to the regulation of the petrol price could offer real benefits to strained consumers.

References

Automobile Association of South Africa. 2020. 'Don't take the insurance bait – cheaper is not always better'. https://aa.co.za/dont-take-the-insurance-bait-cheaper-is-not-always-better-2/.

Bang, C. 2019. 'Fuel price projections: background to the Vietnam Energy Outlook Report 2019'. Copenhagen: Danish Energy Agency.

Crompton, R, Sing, M, Filter, V, and Msimango, N. 2020. 'Petrol price regulation in South Africa: is it meeting its intended objectives?' SA-TIED Working Paper no. 140. UNU-WIDER.

Department of Transport. 2016. 'Financing, funding and charging'. In National Transport Master Plan (NATMAP) 2050. Pretoria.

Department of Mineral Resources and Energy (DMRE). 2022a. 'Dataset on petrol levies, taxes and margins, 95 octane (unleaded petrol)'. https://www.energy.gov.za/FILES/esources/petroleum/December2022/Petrol-margins.pdf.

DMRE. 2022b. 'Petroleum price structure'. https://www.energy.gov.za/files/esources/petroleum/petroleum_pricestructure.html.

DMRE. 2022c. 'Dataset on the basic fuel price'. https://www.energy.gov.za/files/esources/petroleum/petroleum_arch.html.

DMRE. 2021. 'Overview of the petrol and diesel market in South Africa between 2011 and 2020'. https://www.energy.gov.za/files/media/explained/Overview-of-Petrol-and-Diesel-Market-in-SA-between-2011-and-2020.pdf.

DMRE. 2020. 'RAS BSS matrix, as at 7 December 2020'.

DMRE. 2019. 'Briefing on the basic fuel price'. https://pmg.org.za/committee-meeting/29312/.

DMRE. 2017. 'Working rules to administer changes in the price of regulated fuel'. https://www.energy.gov.za/files/esources/pdfs/energy/liquidfuels/annexure_a_05.pdf.

DMRE. 2015. 'RAS BSS matrix, as at 2 December 2015'. http://www.sapra.co.za/wp-content/uploads/rasMatrix/BBS%20matrix%20as%20at%2002%20December%202015.pdf.

Department of Energy. 2018. 'Presentation to the Portfolio Committee on Energy'.

Energy & Petroleum Regulatory Authority. 2022. 'Maximum retail petroleum prices in Kenya for the period 15 January 2023 to 14 February 2023'. Nairobi.

GIZ. 2019. 'GIZ International Fuel Prices 2018/19'.

Hina, H and Malik, A. 2021. 'Petroleum pricing in Pakistan'. In Gas and Petroleum Market Structure and Pricing. PIDE Monograph Series. Islamabad: Pakistan Institute of Development Economics.

KPMG. 2020. ‘Fuel forecourt retail market’. https://assets.kpmg.com/content/dam/kpmg/ie/pdf/2020/06/fuel-forecourt-retail-market.pdf.

National Treasury. 2022a. ‘National budget 2021/22: estimates of national revenue’.

National Treasury. 2022b. ‘Allocations to metropolitan municipalities of general fuel levy’.

National Treasury. 2021. ‘Roads and transport’. In Provincial budgets and expenditure review: 2015/16 – 2022/23.

Petroleum Planning & Analysis Cell. 2022. ‘PPAC’s snapshot of India’s oil & gas data’.

Road Accident Fund (RAF). 2022. ‘Explanatory memorandum to the Standing Committee on Public Accounts (SCOPA) in preparation for the heading on the audit report of the Road Accident Fund (RAF) for the financial year ending 31 March 2021’.

RAF. 2020. Road Accident Fund Annual Reports, 2013–2020.

Statistics South Africa (Stats SA). 2022a. ‘Quarterly Labour Force Survey, Q1 2022’.

Stats SA. 2022b. ‘Headline consumer price index dataset’.

World Bank. n.d. ‘Pump price for gasoline (US$ per liter) dataset’.

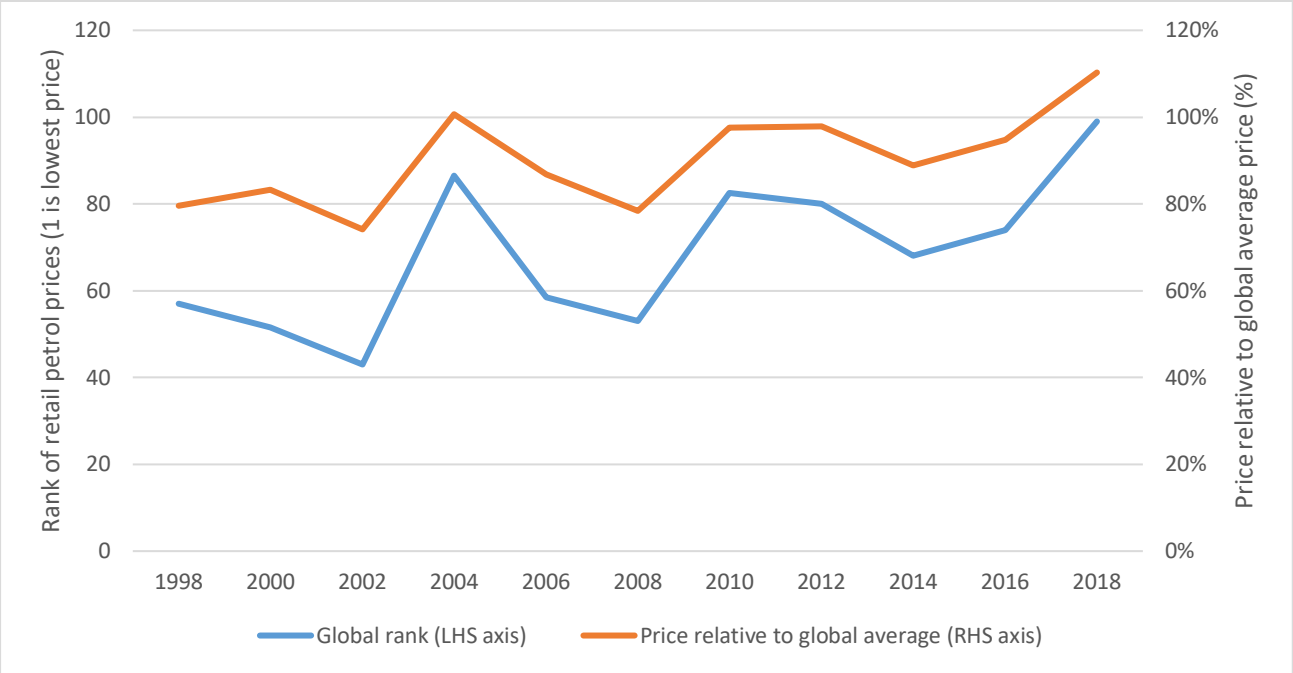
Annexure

Global benchmarking

International benchmarks

Globally, South Africa's retail petrol price has historically been relatively competitive. As shown in Figure A1, South Africa's retail petroleum price has typically been marginally lower than the global average, ranging between 55th and 80th out of 167 markets for cheapest prices. Considering that both averages and this ranking include markets that subsidise fuel, this has typically put South Africa ahead of other oil-importing markets with regulated price regimes, such as India, Australia and Poland.

Figure A1: South African retail petrol prices relative to global prices (1998–2018)



Source: GIZ global retail fuel prices dataset (GIZ 2019), including as reported by the World Bank (World Bank n.d.).

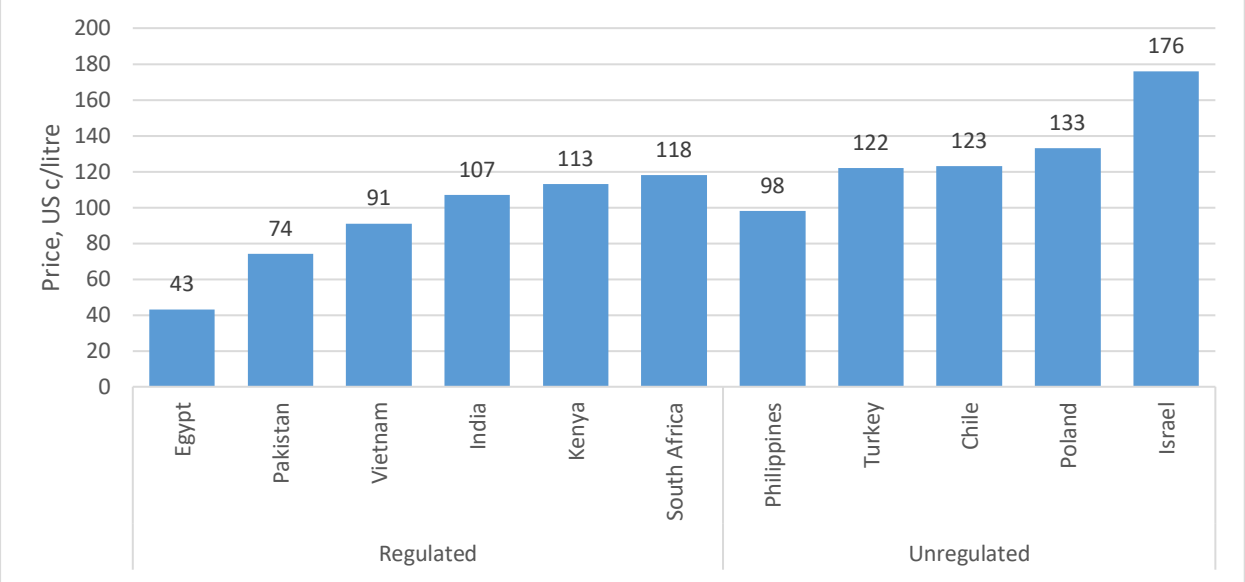
However, this position has been eroded over time, and the most recent results (following increases in a range of regulated price components) show South Africa's petrol price exceeding global averages in 2018 for only the second time in the last 20 years. A lack of more recent publicly available global data on retail petrol prices makes it difficult to evaluate how this picture has changed following further rises in administrative components of the petrol price.

Global case studies

To understand the position of South Africa's petrol prices relative to comparator markets, 10 markets were examined: Chile, Egypt, India, Israel, Kenya, Pakistan, Philippines, Poland, Turkey and Vietnam. Most of these markets were selected because they have similar import levels to South Africa, and no or limited local production of petrol, while India and Kenya were included because they have similar administered price structures to South Africa. Of these,

the most similar regimes to South Africa are those found in Pakistan, Vietnam, India and Kenya.

Figure A2: Average retail petrol prices, select markets (2018)



Source: GIZ global retail fuel prices dataset (GIZ 2019).

In Pakistan, an underlying ex-refinery price (which is similarly calculated to South Africa's basic fuel price) makes up about 62.5% of the total retail price, with the remainder including inland freight costs (approximately 3.6% of the total), a petroleum levy (14.2%), retail (3.7%) and distributor margins (2.8%), and ordinary sales tax (13.3%) (Hina and Malik 2021). While the structure of prices is set by the Ministry of Petroleum and Natural Resources, price calculations and adjustments are set by a nominally independent regulatory agency, the Oil & Gas Regulatory Authority.

In Vietnam, import prices (the closest equivalent to the basic fuel price) make up about 53% of total final petrol prices. The administered component comprises a special environmental protection tax (18.3% of the final price), distribution costs (6.41%), profit margins for both retail and wholesalers (1.83%), a stabilisation fund contribution (1.83%), and a selection of taxes that include import duties, VAT and a special consumption tax (Bang 2019).

In India, the basic price of petrol accounted for 59% of total retail petrol costs at the end of 2022, although this basic price appears to also include some initial taxation and transportation costs (which are not explicitly broken down in relevant documents). Excise taxes are the largest of the administered portion (at 21% of the final price), followed by VAT (16%) and dealer commissions (4%) (Petroleum Planning & Analysis Cell 2022).

In Kenya, the landed cost of petrol (the equivalent of South Africa's basic fuel price) makes up 49% of the final retail price; with the remainder consisting of a wide range of excise and duties (making up 35% of the final price), margins for retailers and wholesalers (7%), a price stabilisation levy (6.5%), and storage and distribution costs (2.15%) (Energy & Petroleum Regulatory Authority 2022). These are, however, maximum prices, with the price free to adjust below the set retail price.

Egypt is in the midst of major petrol market reforms, following efforts to phase out subsidies that largely account for the significant price differential shown in Figure A2. Being mid-reform, they appear to use a hybrid system, in which international market prices determine retail prices, but cannot move outside of a 10% stabilisation band. Given the uncertainty around their reforms, there isn't much useful benchmark information available from Egypt at this time.

Petrol prices in the remaining markets are largely unregulated, albeit with mixed results. Of those countries, the closest with a similarly high administered component of fuel prices is Chile, which levies a specific excise tax (IEC) of about US$0.48/litre (roughly R8.15 per litre). However, this system is not directly comparable to South Africa's regime, because the IEC effectively serves as a price stabilisation tool. Under Chile's price stabilisation policy (Mecanismo de Estabilización de Precios de los Combustibles, or MEPCO), a portion of fuel levies are variable, and increase or decrease based on a fortnightly review of price volatility in the preceding five weeks.

The concept of building a variable, price-linked component into fuel taxes may offer lessons for South Africa, given the dormant equalisation fund that nominally forms a part of the petrol price. Such a policy could be considered comparable to direct policy actions taken by National Treasury during the extreme petrol price spikes seen in 2022, when the fuel tax was temporarily reduced. However, constructing the variance as an automatic stabiliser, rather than a specific ad hoc action taken by the Minister of Finance, would make for a more credible and responsive system.

In addition, fuel for industrial use is fully tax deductible under the Chilean system. While this wouldn't necessarily be a meaningful change for petrol prices, it could be an important consideration for diesel pricing, considering Eskom's near-term dependence on diesel power to run open-cycle gas turbines, and the potential pass-through costs of either purchasing this diesel or increasing loadshedding.

Similar exemptions are available in Israel, where a 50% rebate is available to economically important vehicles like buses, taxis and tractors. Israel deregulated its administered petrol price in 2007, but has subsequently seen a worsening in its already poor position in global petrol prices, with a ranking among the worst in the world. A significant reason for this poor performance can be accredited to very high excise taxes applied to petroleum, which are set at 3.1 new Israeli shekels per litre (R15/litre).

Turkey similarly deregulated its energy market in 2005 and also has petrol prices that are among the highest in the world, although much of this is due to currency instability. In Poland, prices are mostly set by a dominant private sector player, Orlen, which has been frequently accused of high levels of political influence, indicating some of the risks of dominant market structures in strained governance systems. The cases of Turkey and Poland show the complexity of full deregulation in the face of a concentrated domestic market and poor macroeconomic fundamentals.