

PREAMBLE AND ACKNOWLEDGEMENTS

This report has been commissioned by the Chairman of the Board, senior management, and the Climate Change and Sustainable Development (CCSD) Department of Eskom.

The execution of the Eskom Factor 2.0 project was led by a dedicated team from Eskom's CCSD to completion in October 2018, under the guidance of a steering committee consisting of the Executive Committee and selected members of the Board of Directors.

Data and insight were provided by an internal working team comprised of Eskom experts from a wide range of functional divisions.

A team from The Boston Consulting Group (BCG) provided external expertise and independent support for assessment of Eskom's footprint. BCG is a global management consulting firm with a presence in South Africa and a leading advisor on business strategy.

The World Business Council for Sustainable Development (WBCSD) sponsored the development of the Measuring Impact Framework that was used as a template to develop a tailored methodology for the Eskom Factor 2.0. The WBCSD is a CEO-led global association of around 200 companies dedicated to issues of sustainable development in business.

We would like to thank all those who have contributed to this company-wide assessment for their commitment to increase transparency and awareness of Eskom's footprint in South Africa.

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STATEMENT BY THE GROUP CHIEF EXECUTIVE



The Eskom Factor is a publication outlining Eskom's footprint in South Africa. Although Eskom's mandate is to provide a stable electricity supply in a sustainable and efficient manner, we also have a developmental role, which is supporting transformation, broad-based black economic empowerment, job creation, economic and skills development, as well as other national initiatives.

I am proud to launch the Eskom Factor 2.0 Report, which builds on the insights gained from the first Eskom Factor report released in 2011 which was the baseline from which we continued to build on our transparency and positive impact on the South African society.

The Eskom Factor 2.0 Report provides a comprehensive assessment of our direct and indirect economic, social and environmental impact on the country for the six year period 2012 to 2018. The report looked at the impact through three lenses: the primary lens was the performance of the entity across 224 metrics; the benchmarking lens, which looked at key metrics against a relevant peer group; and the third lens that looked at Eskom's contribution to the South African development agenda. Eskom's impact was measured according to eight pillars of influence which are similar to the pillars of the 2011 report; however, a noteworthy additional pillar is Governance and Leadership.

In summary, the results show that Eskom made positive contributions to South Africa in many areas, including contributions to gross domestic product (GDP) and availability of electricity, employment, equity, and local

development. However, the report also highlights significant areas of improvement which include public finances, fatalities, greenhouse gas emissions, air quality, as well as governance and leadership.

As Eskom we are proud to note some positive results, such as the fact that a significant percentage of South Africa's GDP can be traced back to the consequence of Eskom's direct spend and impact on its suppliers from both its operational and capital expenditure. We have also made a considerable positive contribution to South African employment, employing consistently in excess of 40 000 people between FY12 and FY18.

The negative results of our assessment of governance and leadership are no surprise, given the significant amount of allegations relating to governance and corruption in the recent years. We have made good progress in rooting out corrupt behaviours of some of our employees and remain committed in eradicating corruption across all levels of the business as demonstrated by the actions we take against implicated individuals.

With regards to public finance, regrettably in order to sustain our business we have to keep borrowing money. This is unsustainable and so we are seeking ways to deal with the debt.

As a responsible state-owned company, Eskom is committed to fulfilling our mandate as well as our regulatory obligations. As such, we remain committed to the principle of Zero Harm to our people and the environment. Unfortunately, despite our intense commitment to safety, Eskom still faces the challenge of instilling a culture that supports safe behaviour to prevent fatalities. Eskom is also facing a range of challenges with its compliance to air-quality requirements and, as a result, we are engaging Government to seek solutions.

In conclusion, we operate within a complex landscape which involves many different stakeholders with diverging objectives and, as such, we have to carefully balance three roles while delivering on our primary mandate, namely supporting socio-economic development, ensuring regulatory compliance and maintaining commercial viability.

My heartfelt thanks go to all who made this publication possible, and who will continue to actively increase the transparency of Eskom's footprint into the future.



Phakamani Hadebe
Group Chief Executive

EXECUTIVE SUMMARY

The Eskom Factor is a collective term explaining our footprint in South Africa, which was quantified through a comprehensive external assessment of our economic, social and environmental impact on the country, both positive and negative, for the period from 2012 to 2018.

As the primary electricity producer, transmitter and distributor in South Africa over the past 95 years, the impact that Eskom Holdings SOC Ltd (Eskom) has had on the country is significant. Not only is Eskom a key enabler of economic growth and development, but the company also has an impact on the environment and society at large. The Eskom Factor 2.0 Report is intended to be a thorough assessment of the entity's impact and contributions across these areas, both directly and indirectly, and covers both the positive and negative impacts.

The report builds on the Eskom Factor Report from 2011 utilising an improved methodology based on the WBCSD¹ framework. In this version, Eskom's impact has been measured according to 224 indicators which have culminated into eight pillars of influence.

Driving the economy

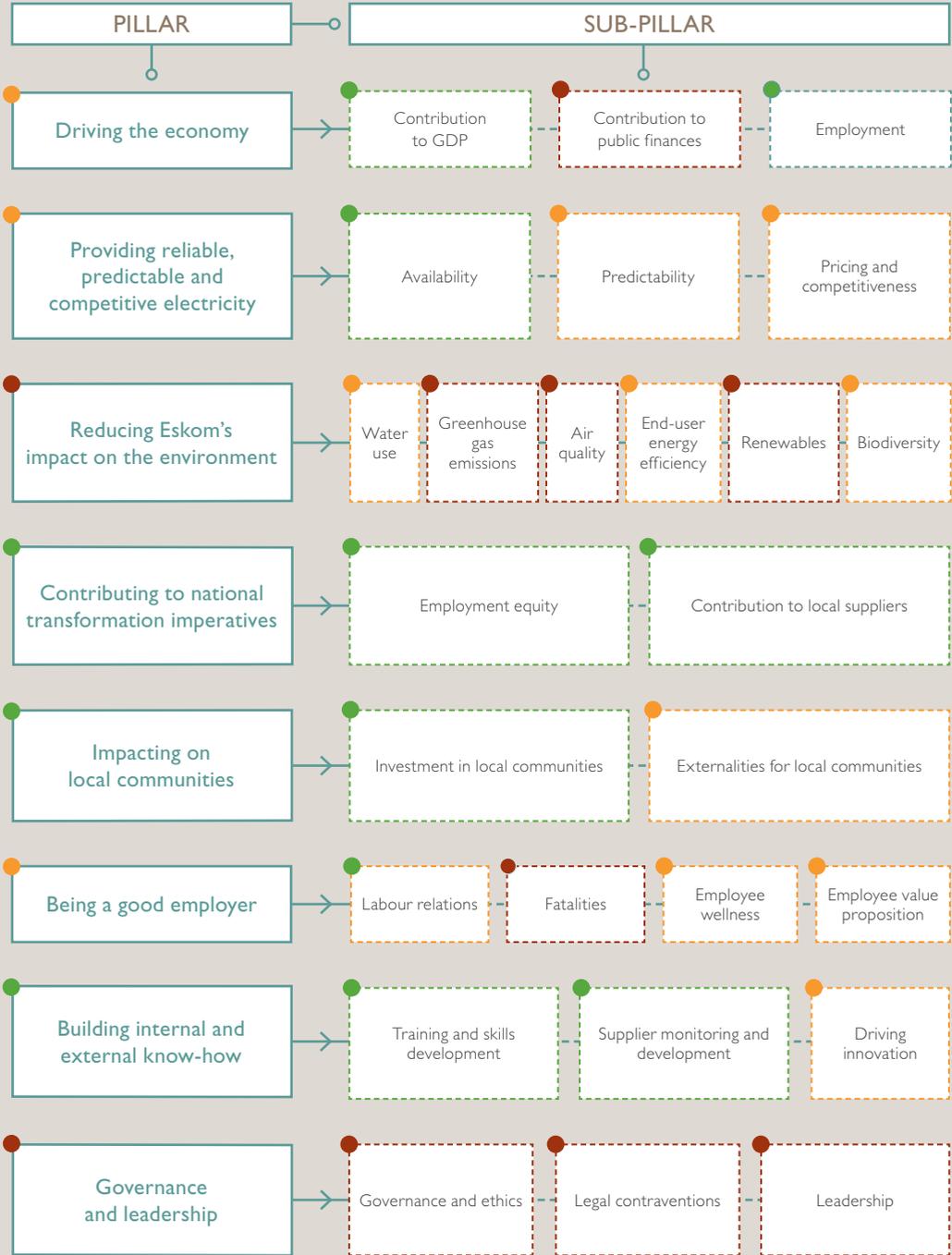
Eskom is a major driver of the economy not only through its role as primary provider of electricity, but also by way of the economic stimulus provided through its operations and significant capital expenditure. Eskom provides more than 90% of all electricity in South Africa, a critical input to most major industries. Eskom produced a total turnover of more than R177 billion in FY18².

An estimated 3.1% of South Africa's GDP in 2017³ can be traced back to the ripple effects of Eskom's direct spend and impact on its suppliers from both its operational and capital expenditure. This is referred to as Eskom's direct contribution to GDP and is a decrease from the estimated 3.6% direct contribution in 2011. Eskom is estimated to have made an economy-wide GDP contribution⁴ of around 6.3% in 2017, a decrease from the estimated 7.2% in 2011. The decrease in direct and economy wide GDP contribution was primarily the result of a relative reduction in capital expenditure and associated impact between 2011 and 2017.

While there was a relative decrease in Eskom's capital expenditure between FY12 (R58.3 billion) and FY18 (R47.5 billion), Eskom's large-scale capital expansion programme remains an important stimulus to the economy and one of the largest capital build programmes in recent years. Over the last seven financial years, Eskom injected a cumulative R394 billion into the economy through its capital investments. At completion, the new build programme will have added 10 896MW to total generation capacity⁵ in the country. It is noted, however, that the occurrence of rotational loadshedding over recent years has had a negative impact on GDP through the resultant loss in productivity, and has impacted investor confidence in South Africa.

1. World Business Council for Sustainable Development.
2. Throughout the report, FY refers to Eskom's financial year (1 April to 31 March).
3. Estimated by Quantec, an independent economics consultancy. Financial and labour statistics for Eskom from publicly available data sources and annual reports were used to estimate the national economic footprint of Eskom in 2011 and 2017, using detailed input-output (IO) analysis and a comprehensive supply and use table (SUT) based multiplier model for the South African economy. Detailed methodology and assumptions included in the appendix of this report.
4. Economy-wide impact is estimated as the sum of the direct, indirect and induced economic impact. Indirect economic impact refers to when Eskom's suppliers purchase goods and services from their suppliers who remunerate their employees and pay taxes. Over and above this, employees of Eskom and its suppliers re-spend their salaries and wages in the economy which again generates further economic activity. The latter is known as the induced impact of Eskom.
5. From Kusile (4 800MW), Medupi (4 764MW) and Ingula (1 332MW).

ESKOM FACTOR 2.0



● Mostly positive

● Both positive and negative

● Mostly negative

Eskom made a considerable positive contribution to South African employment over the period, employing consistently in excess of 40 000 people between FY12 and FY18⁶. It is estimated that Eskom provided employment to more than 124 000 people⁷ in 2017 as a result of its own employee complement in operations plus third party contractors it had direct control over through its capital expansion programme⁸.

However, in terms of contribution to public finances, three important criteria suggest that Eskom had an increasingly negative impact on government finances between FY12 and FY18. Total tax contributions decreased to R9.6 billion (FY18) from R11.3 billion (FY12). Government made an equity injection of R23 billion into Eskom in FY16, and there was a conversion of a R29 billion loan to equity in that year, in effect forgoing any interest on this loan in the future. Most notably, the absolute debt levels and exposure held by government have increased rapidly. Net debt increased to R391 billion (FY18) from R143 billion (FY12), with 62% now guaranteed by government. The substantial amount of debt guaranteed by the government poses a significant risk to the South African economy.

Another, often overlooked aspect, of Eskom's expenditure is the value of contribution beyond commercial imperatives included. Eskom's developmental mandate and associated obligations imply that it makes positive social contributions both through its direct social expenditure and implicitly through the social contribution in its core business. These contributions have a positive impact on the broader South African community, but they also significantly add to Eskom's operational commitments and ability to operate profitably.

The combination of the abovementioned factors places significant strain on public finances, and Eskom is determined to alleviate some of this pressure going forward.

Providing reliable, predictable and competitive electricity

Eskom is committed to making electricity universally available in South Africa. Approximately five million additional homes have been electrified since 1991, and

South Africa now has an electrification rate of about 90% (compared to 34% in 1991). This figure is significantly higher than the 51% average for Africa. Eskom has been a major contributor towards achieving the National Development Plan (NDP) electrification target 12 years ahead of planned timelines⁹.

However, when one considers perception around the quality of Eskom's services, one notes a decreasing trend. One objective measure of the quality of Eskom's services is the "Products and Services" component of the RepTrak Pulse survey conducted by the Reputation Institute. In 2017, Eskom's aggregate score for "Products and Services" was 32.9 compared to 39.2 in 2012. Any score below 40 is considered poor/bottom tier¹⁰. The average state-owned company (SOC) score for "Products and Services" was 44.9, while the best performer under SOCs scored 55.1.

Considering predictability, the data shows that Eskom has improved since 2011 in terms of both duration and frequency of interruptions. Interruption duration is measured through the system average interruption duration index (SAIDI) (average outage duration for each customer served), which improved from 45.8 hours to 38.9 hours. Frequency is measured through the system average interruption frequency index (SAIFI) (average number of interruptions that a customer would experience), which improved from 23.7 to 18.9 occurrences. Despite the improvements, Eskom is still far behind international utility benchmarks (including utilities from both developed and developing nations).

It is important to note that these metrics are influenced by a high proportion of the Eskom distribution network (more than 70%) being above ground, and therefore more easily damaged. In terms of the transmission component, Eskom's system minutes lost <1 minute for FY18 was 2.09, a significant improvement relative to the FY12 figure of 4.73 minutes. No major incident >1 minute was recorded in FY18, compared to one incident in FY12, and a target of two per financial year. Eskom's energy availability factor (the availability to produce energy as a percentage of the energy that could have been produced at full capacity) for FY18 measured 78%, which is in line with the target, but is down from 82% in FY12.

6. The employee complement (permanent employees plus fixed-term contractors (FTCs)) for Eskom company over the period was 41 202 (FY12); 43 402 (FY13); 42 923 (FY14); 41 787 (FY15); 42 767 (FY16); 41 940 (FY17); and 41,316 (FY18). These figures do not include the employee complement for Eskom subsidiaries (7 312 in FY18) or third-party contractors engaged at either Eskom company or Eskom subsidiaries.

7. Employment estimates by Quantec. Detailed methodology and assumptions in appendix of this report.

8. This compares to employment of more than 158 000 in 2011, with the difference in 2017 primarily the result of lower capital expenditure and associated construction employment.

9. NDP target was set for 90% electrification by 2030.

10. All four elements of the "Products and services" component decreased between 2012 and 2017 and now rank below 40 on the RepTrak scale. "High quality" decreased from 44.7 (2012) to 35.6 (2017); "Value for money" decreased from 36.9 (2012) to 30.7 (2017); "Stands behind products" decreased from 39.3 (2012) to 36.3 (2017); "Meets customer needs" decreased from 36.1 (2012) to 29 (2017).

In terms of affordability, the public's concerns are understandable given the steep increases in electricity prices since 2012 (9.8% per annum)¹¹. This is further amplified by differences between direct Eskom and municipal tariffs, where the latter tend to be higher and not within Eskom's control. Future price increases will depend largely on the tariff increases granted to Eskom by the National Energy Regulator of South Africa (NERSA). However, it should also be noted that South Africans still have access to competitively priced electricity relative to other countries globally, both in absolute and relative terms (considering household income). In 2017, South Africa's average price of electricity was 7 US cents per kWh against an average of 15 US cents per kWh for a selected peer group of countries (which includes other African countries).

Reducing Eskom's impact on the environment

Indirectly, through the provision of electricity, Eskom has numerous positive environmental impacts, such as reduced indoor air pollution. However, given its coal-dominated electricity generation activities, Eskom has an adverse effect on South Africa's environment through resource use (mainly coal and water), greenhouse gas emissions (206Mt of CO₂ in FY18), as well as particulates (57kt in FY18), SO_x (1 802kt in FY18), and NO_x (859kt in FY18) emissions. Resource use and emissions have decreased since 2012, predominantly as a result of lower electricity production. On a normalised basis, emissions were relatively stable over the same period.

Future reductions in Eskom's impact on the environment largely depend on the Integrated Resource Plan (IRP) given that the IRP determines the forward-looking energy mix. A lower reliance on coal will reduce adverse emission effects, including the health effects of emissions. However, this decision poses two important trade-offs to South Africa.

The first trade-off relates to affordability. Within the South African context, the primary energy unit cost of coal electricity (R309/MWh) is still significantly less than the current primary energy unit cost of IPP¹² purchases (R2 222/MWh). This is largely driven by the fact that Eskom can make use of existing power stations for much of its coal-fired power generation. This is, however, a short-term view as the cost of renewable energy is expected to decrease over time. Also, the cost of new build projects should be factored into the sustainable cost of coal use going forward. Both factors will reduce the absolute difference between the energy unit cost of coal and IPP purchases.

The second trade-off relates to the impact on the South African coal mining industry. Eskom procured 115Mt of coal in FY18, approximately 45% of South Africa's total

coal production for 2017. Lower levels of coal usage imply that the mining industry's output and employment in the sector will be adversely affected. The coal mining industry remains an important provider of employment in the overall South African mining industry, estimated to have employed 82 248 people in 2017, an increase from the 60 187 people employed in 1994. The employment provided by the coal industry is even more important considering that overall employment from the mining industry is estimated to have decreased from 611 018 in 1994 to 462 870 in 2017.

While Eskom's installed renewables capacity is a small proportion overall, Eskom is an enabler of renewable energy within the country. Eskom provides the IPPs with connection to the grid, and also enables renewable IPPs to operate intermittently by providing base load capacity and balancing supply to meet the hourly system demand. It is also noted that from a broader South African perspective, renewable energy capacity in the country has increased at 21%¹³ per annum between 2008 and 2017, surpassing that of several other African countries (detailed further in "Reducing Eskom's impact on the environment – Renewables" on page 22).

Contributing to national transformation imperatives

Eskom continues to make significant contributions to national transformation imperatives, although there are areas for improvement. Between FY12 and FY17, Eskom was consistently rated as either a level 2 or 3 B-BBEE contributor, and was certified as a level 2 contributor in FY17. However, Eskom was rated as level 8 in FY18¹⁴. This low rating is due to state-ownership no longer being considered as being black-owned under the new B-BBEE Codes of Good Practice, and is thus out of Eskom's control.

Eskom continues to make a strong contribution to employment equity in South Africa both from an overall employment perspective as well as representation at various management levels. In FY18, 85% of all Eskom employees were black, 34% were female, and 29% were black females. Furthermore, 3% were employees with disabilities. In FY18, Eskom was ranked first among the South African corporate peer group for black representation in both the top and senior management categories. Eskom also ranked second in its peer group in FY18 for female representation in senior management. However, one area for potential improvement is female and specifically black female representation in top management, where representation decreased between FY12 and FY18. In top management, Eskom is ranked among the lowest in the South African corporate peer group for female representation.

11. Average price charged by Eskom (c/kWh) growth rate per annum from FY12 to FY18.

12. Independent power producers.

13. IRENA Renewable Capacity Statistics, 2018.

14. More specifically, until June 2018 when the relevant certificate expired.

Eskom produced mixed results in terms of contribution to local suppliers between FY12 and FY18. Procurement from black-owned businesses in FY18 amounted to 33% of total spend, and is a notable contributor to transformation given the value (R53.5 billion). In FY18, procurement from B-BBEE attributable suppliers amounted to R97 billion, an increase from R72 billion reported in FY12. However, there was a decrease in percentage of spend to B-BBEE attributable suppliers over the period under review. However, it should be noted that within the new B-BBEE codes, certain elements can no longer be claimed when calculating total measured procurement spend. Initiatives are being implemented by Eskom to address and improve the B-BBEE performance. Despite the decline in some areas, the overall value of procurement spend on attributable suppliers, and other categories, is a substantial contributor to forwarding transformation.

Impacting on local communities

Eskom remains an important contributor to the development of local communities. This is evidenced through the work of the Eskom Development Foundation, which committed R192 million in corporate social investment (CSI) spend in FY18 (more than R1.05 billion cumulatively between FY12 and FY18). This includes investments in maths and science education, primary health care, schooling infrastructure and small business development. In addition to this contribution, Eskom also engages in other types of socio-economic development activities through its various divisions. These include salaries and training spend for bursars, learners, interns, and scholarships as well as the construction of old age homes and the donation of labs, computers, and educational tools to schools.

Eskom contributes to local infrastructure through investments in road, rail, telecommunications, sewage, and other infrastructure supporting Eskom's own new build projects. For example, over R2.1 billion has been spent on local infrastructure at Medupi since the inception of the project (August 2007), with the majority of this investment being R1 billion spent on new housing and a further R750 million on the contractor village. Further to this, over R204 million has been invested in road infrastructure and bridges. Additional projects have included the development of electrical infrastructure, a sewage plant, schools, community centres, and public buildings such as police cabins, clinics, and wellness centres. At Kusile, an estimated R200 million has also been spent on CSI-related initiatives over the lifetime of the project.

Through its various new build projects, Eskom also generates sizeable construction-related local employment. At Medupi and Kusile alone, nearly 40 000 people were directly employed at the peak of construction. In addition to the employment created, these opportunities led to permanent skills development, which is described under

the supplier development and localisation section of the current report. In addition, Eskom has positively impacted local communities through electrification of households (more than 215 000 in FY18, majority of which are in rural areas), which not only provides convenience and comfort, but also reduces indoor pollution and risks associated with burning of fuels.

On the other hand, Eskom also has adverse effects on local communities. The most prominent example of this are relocations where people are requested to move from their homes to alternative accommodation. Since 2011, approximately 746 households were relocated due to various Eskom projects. Eskom's policy is to compensate these families to the same level or better. Relocated families are offered both financial support for relocation (on average R327 000 per household) as well as support through counselling services. Other adverse impacts include the effects of Eskom's emissions which reduce the quality of air for people living near coal-fired power stations. These emissions can cause severe respiratory conditions for the people living in affected communities. To mitigate this impact, retrofits have taken place to improve air quality performance at Eskom's power stations. Air quality offset programmes have also been implemented.

Being a good employer

As one of the largest employers in South Africa, Eskom's relationship with its own employees constitutes a critical part of its total impact on society. One of the clear challenges facing Eskom in this respect is maintaining a constructive dialogue with the labour unions. Notably, there have been a number of high-profile disputes and industrial action over recent years. While this remains a challenge, the internal relations between employees and Eskom management appears to be improving based on the ability to resolve employee grievances through internal avenues.

In the employee wellness space, Eskom has several mandatory and voluntary programmes in place to encourage good health across the company. While this process has been fragmented in the past, there has been progress made to centralise these initiatives. This centralisation enables monitoring and improvements for initiatives in the future. One of these initiatives is a series of voluntary health screenings that has resulted in 87% of employees knowing their HIV status. Another is the "know your numbers" programme – a health screening initiative that has been running in Eskom since 2014. This programme includes the screening of five key health metrics: blood pressure, glucose, cholesterol, BMI and waist circumference. Eskom also runs an Employee Assistance Programme (EAP) of psychosocial services including counselling, financial wellness and trauma assistance.

In terms of employee safety, Eskom remains committed to the Zero Harm philosophy. A total of 30 000 employee safety trainings were conducted per year, further promoting this. Importantly, the lost-time injury rate (LTIR) decreased by over 50% from FY12 to FY18. Despite these efforts, there were fatalities both within Eskom (15) and in the general public (26) through Eskom-related activities in FY18.

Eskom's employee value proposition¹⁵ remains key to attracting and retaining the best talent. Eskom is well positioned to attract talent in the engineering field, where it rates as a top employer for both students and professionals. However, it should be noted that Eskom rates as less attractive in other fields of specialisation, where attracting talent is more of a challenge. Retention within Eskom is also positive, as employee turnover is among the lowest of comparable peers. Key results of the employee engagement survey show that some aspects of job satisfaction are rated highly, whereas areas for concern for employees are career progression opportunities and remuneration.

Building internal and external know-how

Eskom invested more than R11.4 billion in training and skills development between FY12 and FY18. This includes training for Eskom employees, learnerships, as well as external bursaries and scholarships. In FY18, Eskom invested R1.4 billion¹⁶ in employee training and skills development (approximately R28 000 per employee)¹⁷. Total training and skills development spend in FY18 was 5.2% of total employee benefits, down from 6.3% in FY12. However, Eskom still had the highest training and skills development spend per employee among its South African corporate peer group¹⁸.

A key component of Eskom's training and skills development contributions are the learnerships it provides to engineers, technicians, artisans, and also some non-technical positions. Considering the recent drive within Eskom to create a more streamlined organisation, the focus has shifted primarily to providing to the needs of the Eskom business as opposed to training for the broader country-level skills needs. Aligned with this, total new learner intake in FY18 was down to 726 individuals from 1 794 in FY12. Learners currently enrolled in the system across all categories (technical and non-technical) decreased significantly

between FY12 and FY18, a decrease of 29% for engineers and more than 83% for non-technical learners. However, it should be noted that the decrease in FY18 followed a historically large intake of 2 448 individuals in FY17, particularly of engineers (824) and technicians (878). Considering the total number of learners trained over the period FY12 to FY18 (38 364), the contribution made by Eskom to training individuals through these learnerships remains a significant contribution to training and skills development in the country.

In terms of procurement, in FY18 Eskom procured approximately R18.5 billion worth of local content through supply contracts for major projects such as Medupi, Kusile and Ingula. More than 11 000 individuals were trained by suppliers over the lifetime of these major projects as a direct result of contractual obligations. Furthermore, Eskom allocates CSI funds for the development of suppliers through its Enterprise Development initiatives. The Enterprise Development CSI budget increased to R35 million (FY18) from R16.1 million (FY12), with a total investment of more than R240 million over the period under review.

Eskom's annual research and development (R&D) budget decreased to R111 million (FY18) from R186 million (FY12). However, the outcomes of Eskom's investments in this area have remained relatively consistent. The outcomes of Eskom's investments in R&D over the period are illustrated through the number of patents registered in FY18 of 19 – an increase from 17 (FY12). The number of patents registered by Eskom was consistently at 19 per annum from FY15 to FY18. Furthermore, Eskom contributed/supported a total of 11 research papers in FY18, equal to the FY12 level; 30 research papers were contributed in FY13 along with 17 patents¹⁹.

Governance and leadership

Significant damage has been done to Eskom's corporate reputation over the last few years as allegations of corruption and mismanagement have been widely reported in the media. The extent of damage done to Eskom's corporate reputation is evidenced by the fact that Eskom was ranked last out of 50 South African companies surveyed in the 2018 RepTrak Pulse survey conducted by the Reputation Institute.

15. Employee value proposition broadly refers to a set of associations and offerings provided by an organisation in return for the skills, capabilities, and experiences an employee brings to the organisation.

16. Includes training spend on own employees as described in the report in "Building internal and external know-how – Training and skills development" on page 30, as well as bursaries and scholarships.

17. Training expenses excluding bursaries and scholarships, divided by total group full time employees, excluding contractors.

18. It should be noted that Eskom's total training spend includes all expenditure associated with the Eskom Academy of Learning (EAL), Eskom's in-house training facility located in Midrand. At the time of finalising this report, a further detailed breakdown of Eskom's training and development expenditure had not been provided.

19. Further details on, for example, Eskom's investments in low carbon technologies and innovative partnership programmes it engages in had not been made available at the time of finalising this report, thereby limiting the scope of innovation that could be assessed.

The irregular expenditure²⁰ and fruitless and wasteful expenditure over recent years have raised questions around the potential governance shortcomings at Eskom. Notably, Eskom received a qualified audit opinion in FY17 – when the external auditors could not rely on the processes in place to ensure the completeness of irregular expenditure reported. Following the implementation of improved governance processes, irregular expenditure identified in FY18 increased to more than R13.3 billion from around R2.7 billion in FY17.

Eskom has instituted a recovery plan aimed at recovering funds related to fraudulent or corrupt contracts. At FY18 year end, around 98% of 205 contracts over R1 billion and 91% of 6 998 contracts under R1 billion awarded over a period of three years had been reviewed. Eskom has also terminated or suspended contracts with suppliers shown to have a corrupt relationship with Eskom.

Investigations conducted by Eskom's forensic audit team have increased significantly in the past financial year, particularly in the area of irregularities. A total of 237 investigations were conducted in FY18 compared to 175 in FY17. As a result, six criminal cases were referred to the police between January and September 2018. Furthermore, seven Eskom senior managers including executives resigned in FY18 following allegations related to corruption and misconduct.

The 2018 Integrated Report highlights corporate governance and ethics as a key priority going forward, with significant improvements to be made, particularly in the areas of quality of information, governance structures and ethics.

Comparison against goals set by the 2011 Eskom Factor Report

Eskom concluded its previous Factor Report with identifying five key areas of improvements in terms of its footprint in South Africa. Those five areas were: availability and reliability of supply; efficient use of electricity; environmental footprint; electrification; and health and safety. The extent of improvement in those areas is a combination of positives and negatives as described below.

Despite specific targets not being set by the Eskom Factor 2011, one can still assess how Eskom has performed against these proposed improvements in the period since.

- As discussed previously in the section on availability, Eskom has made great effort to increase electrification, reaching the NDP target 12 years in advance of the deadline, thus meeting improvement ambitions in that area.
- In terms of availability and reliability of supply, environmental footprint and health and safety, despite the slight improvements, Eskom is still far behind benchmarked peers.
- On efficient use of electricity, Eskom has declined in performance, as energy savings through the integrated demand management programme have significantly decreased over the period. This is largely due to the past success of the 49M campaign and the change in behaviour amongst electricity users who now use electricity more efficiently. It is also partly due to the increase in the electricity price. Currently, there is a reduced necessity for demand side management as available capacity has increased and customer demand has decreased.

20. The Public Finance Management Act, 1999 (PFMA) defines irregular expenditure as "expenditure, other than unauthorised expenditure, incurred in contravention of or that is not in accordance with a requirement of any applicable legislation". This should be very clearly distinguished from fruitless and wasteful expenditure, which means "expenditure which was made in vain and would have been avoided had reasonable care been exercised".

INTRODUCTION

Objectives of the Eskom Factor 2.0

As the primary electricity producer, transmitter and distributor in South Africa, Eskom's impact on the country is significant. Not only is Eskom a key enabler of economic growth and development, but the company also has an impact on the environment and society at large.

Eskom's economic, environmental, and social responsibility is even greater as a state-owned enterprise, as is the need for transparency around how the entity's operations affect these dimensions. The Eskom Factor 2.0 Report is intended to be a thorough assessment of the entity's sustainable development impact and contributions across these areas, both directly and indirectly. This Factor Report also seeks to build on the insights and engagement of the first Eskom Factor Report which was published in 2011, and reviews the performance of the company in the intermediate period.

The report is based on a robust assessment methodology that spans eight pillars which encapsulate Eskom's areas of impact. The primary assessment of impact is the performance of the entity across numerous metrics, based on internal company data. This has been augmented with benchmarking of key metrics against a relevant peer group, and the review of Eskom's contribution to the South African development agenda. In addition, a diverse panel of individuals has been engaged to ensure an outside-in perspective is incorporated.

The pillars within the report are broadly aligned with Eskom's five key strategic objectives which guide its focus areas and associated actions. As such, the Eskom Factor 2.0 provides insight into the progress made across these dimensions. The strategic objectives can be briefly summarised as follows:

1. Ensuring a financially viable and sustainable Eskom;
2. Providing reliable, affordable and predictable electricity;
3. Making a transformative socio-economic contribution;
4. Being environmentally responsible; and
5. Providing focused research and development.

This approach has been tailored to encourage open dialogue around Eskom's contribution, both positive and negative, to the country. The approach also creates the opportunity to reflect on how the operating environment and Eskom's performance have evolved between the 2012 and 2018 financial years, and to understand the key potential areas for improvement. As a historical review of performance, the report is intended to be an input for discussions about the future of Eskom, but not provide any judgement about past choices and any recommendation for the future, except to the extent that mitigating actions are planned or have been implemented.

The Eskom Factor 2.0 Report does not replace compliance reporting, such as the Integrated Report, or any other regular Eskom publication. While the Integrated Report is a review of the company's financial performance and performance against the stated strategy and objectives, the Eskom Factor Report aims to comment on both the direct and indirect, economic, social, and environmental impacts of Eskom, and provide some judgment as to whether the impact is generally negative, generally positive, or has both positive and negative attributes. The Eskom Factor Report is also not an annual publication, but rather assesses Eskom's impact over a multi-year period.

The transparent outcomes of this report, as provided through the objective assessment of Eskom's contribution, are of particular importance as Eskom rebuilds its reputation and works towards re-establishing its position as a state-owned entity that positively impacts the lives and livelihoods of South Africans.

About Eskom²¹

Eskom Holdings SOC Ltd is a state-owned company (SOC), wholly owned by the South African government through the shareholder ministry, the Department of Public Enterprises (DPE). It also answers to the Department of Energy (DoE), as the ministry which sets energy policy, and the National Treasury, which provides financial oversight.

Eskom is South Africa's primary energy supplier, providing around 90% of electricity used in the country, and around 40% of electricity used on the African continent. The core operations of Eskom in the electricity value chain include the generation, transmission, distribution, and sale of electricity, as well as the construction of new power stations and infrastructure, backed by support functions across the value chain. Eskom operates 30 power stations, providing most of the base load and peaking capacity to the national grid, although there is an expanding role being played by independent power producers (IPPs) within this system. The electricity industry is governed by the National Energy Regulator of South Africa (NERSA) which is responsible for providing licences to operate and regulations, as well as setting the tariffs which Eskom can charge.

Eskom's mandate is to provide stable electricity supply in a sustainable and efficient manner, in order to assist in lowering the cost of doing business in South Africa and enabling economic growth. Added to this is the developmental role of supporting socio-economic development, transformation, broad-based black economic empowerment, job creation, and skills development. As the provider of electricity to industrial, mining, commercial, agricultural, and residential customers as well as redistributors, Eskom's ability to provide affordable and reliable electricity is foundational to the social and economic prosperity of South Africans. In order to play this role in a sustainable and ethical manner, Eskom prescribes to the following core values:

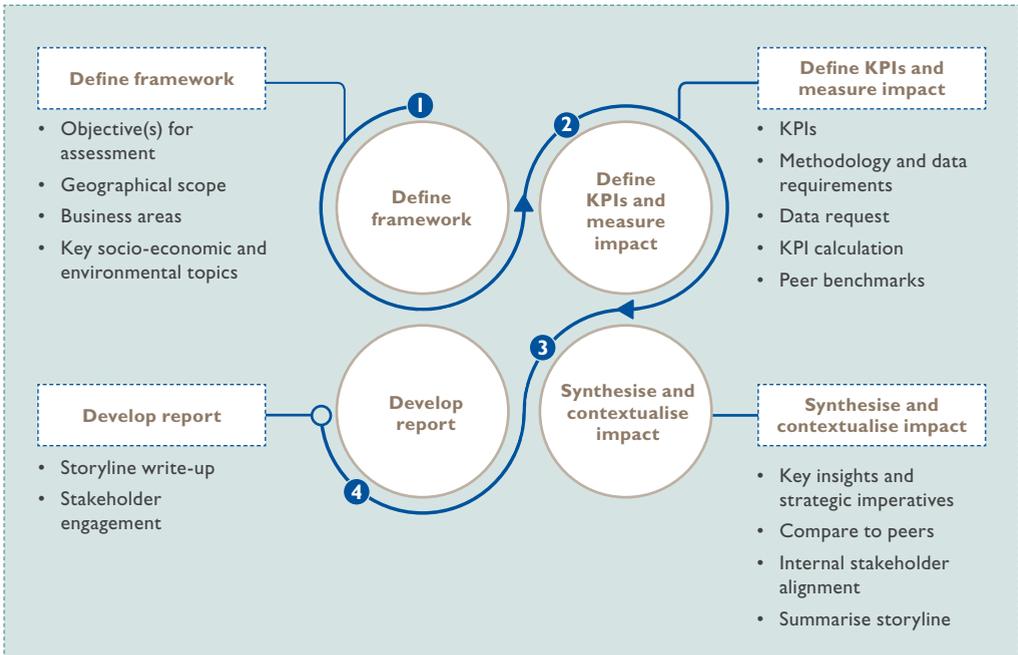
- Zero harm
- Integrity
- Innovation
- Sinobuntu (caring)
- Customer satisfaction
- Excellence

Eskom operates not only in South Africa, but also as a supplier and buyer of electricity within the Southern African Development Community (SADC) through the Southern African Power Pool (SAPP). Eskom imports electricity from Mozambique, and is a major supplier of electricity to neighbouring countries such as Lesotho, Zambia, and Zimbabwe. However, international sales form less than 10% of Eskom's demand. For this reason and others, Eskom's international impact is not the focus of this report, yet the importance of Eskom internationally should not be underestimated.

21. Based on details from the 2018 Eskom Integrated Report.

METHODOLOGY

Eskom adopted a structured methodology for the Eskom Factor 2.0 which is based on a four-step framework developed by the World Business Council for Sustainable Development (WBCSD). The methodology is similar to the one used in the 2011 Eskom Factor Report.



Further details on the methodology can be found in the appendix from page 44.

THE ESKOM FACTOR 2.0

The Eskom Factor 2.0 assesses the total economic, environmental, and social impact of Eskom in South Africa.

The individual indicators which have been measured for this assessment have been aggregated into the following eight pillars:

- Driving the economy
- Providing reliable, predictable, and affordable electricity
- Reducing Eskom's impact on the environment
- Contributing to national transformation imperatives
- Impacting on local communities
- Being a good employer
- Building internal and external know-how
- Governance and leadership

These eight pillars are further made up of sub-pillars, each of which is evaluated in detail in the following sections of the report.

Driving the economy

The first pillar highlights Eskom's role in driving the South African economy through its contribution to GDP, public finances, and its role as a major employer in the South African economy.

Contribution to GDP

Eskom remains a major driver of the South African economy in its role as both the primary provider of electricity and major purchaser of goods and services. In terms of overall size, Eskom had a turnover of R177 billion in FY18.

An estimated 3.1% of South Africa's GDP in 2017²² can be traced back to the ripple effects of Eskom's direct spend and impact on its suppliers from both its operational and capital expenditure. This is referred to as Eskom's direct contribution to GDP and is a decrease from the estimated 3.6% direct contribution in 2011. The decrease in direct GDP contribution was primarily the result of a reduction in capital expenditure and associated impact over the period. These numbers take into account only initial impacts and first-round effects in the economy. However, when considering economy-wide effects, Eskom's contribution to GDP is estimated to be around 6.3% for 2017. It is noted, however, that Eskom's monopoly position in South Africa as the main generator, transmitter and distributor of electricity creates an environment where its impact on GDP cannot be anything short of substantial.

Eskom's contribution to the South African economy ranges from its core business, the generation, transmission and distribution of electricity to its support of the various suppliers that provide inputs to this core business. In addition, Eskom also supported a range of other industries that supply it with goods and services including coal, petroleum, metals, engineering and construction services as well as various other ancillary services. For example, Eskom spent more than R85 billion in FY18 procuring goods and services required to produce primary energy. This included the purchase of 115Mt of coal in FY18, approximately 45% of South Africa's total coal production for 2017.

22. Estimated by Quantec, an independent economics consultancy. Financial and labour statistics for Eskom from publicly available data sources and annual reports were used to estimate the national economic footprint of Eskom in 2011 and 2017, using detailed input-output (IO) analysis and a comprehensive supply and use table (SUT) based multiplier model for the South African economy. Detailed methodology and assumptions are included in the appendix of this report, from page 44.

Eskom's suppliers, in turn, purchase goods and services from their suppliers who remunerate their employees and pay taxes. This is referred to as Eskom's indirect impact on the economy. Over and above this, Eskom employees and its suppliers spend their salaries and wages in the economy which further generates economic activity. The latter is known as the induced impact of Eskom. Considering all these different elements, around 6.3% of South Africa's GDP can be traced back to the direct, indirect and induced impacts of Eskom. This is typically referred to as a company's total economic footprint or economy-wide impact. The economy-wide impact of Eskom in 2011 was estimated at around 7.2%, with the reduction between 2011 and 2017 primarily the result of relatively lower capital expenditure and associated economic impact in 2017.

While there was a relative decrease in Eskom's capital expenditure between FY12 (R58.3 billion) and FY18 (R47.5 billion), Eskom's large-scale capital expansion programme remains an important stimulus to the economy and one of the largest capital build programmes in recent years.

The focus of this large-scale capital expansion programme has been the building of new power stations such as Medupi, Kusile, and Ingula – injecting a cumulative R394 billion into the economy over the period. Eskom's large new build project has a total planned capacity of 10 896MW. Of this planned capacity, 4 513MW has been added to date from three units at Medupi Power Station (2 382MW), one at Kusile (799MW), as well as the pumped storage station at Ingula (1 332MW).

These significant investments will ensure that as the primary electricity supplier, Eskom will continue to enable much of South African industry, especially manufacturing and other heavy users of electricity. It is noted, however, that the occurrence of rotational loadshedding over recent years has had a negative impact on GDP through the resultant loss in productivity. In addition, power outages impact investor confidence in South Africa.

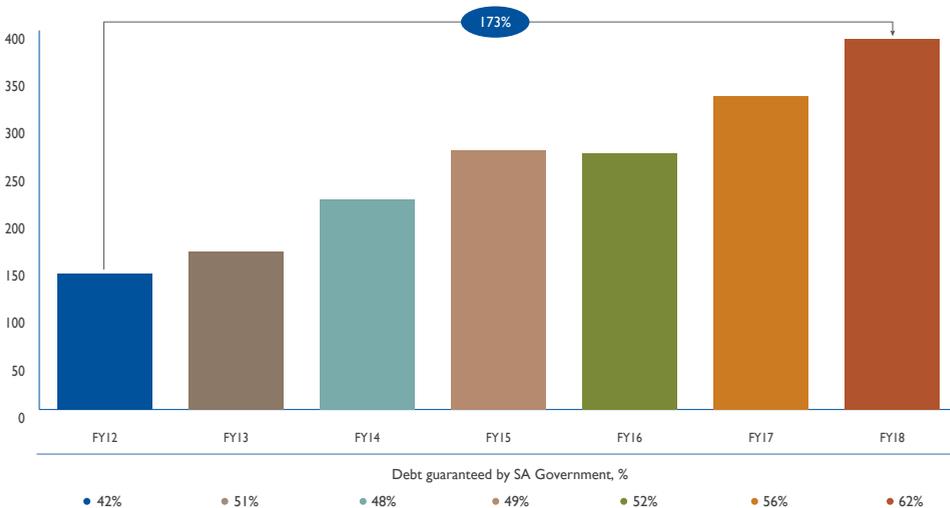
Eskom also has a negative economic impact to the extent that natural resources are depleted, and the indirect impacts of Eskom's supply chain pose a cost to the government. For example, the poor air quality and consequential illnesses result in additional healthcare costs. Through the purchase of coal, Eskom is also indirectly responsible for acid mine drainage which affects the quality of water in the area. Dealing with the problem of decanting acid mine drainage can have substantial financial implications.

Contribution to public finances

We consider Eskom's contribution to public finances based on three primary criteria: 1) Eskom's total contribution to taxes; 2) its returns to government as shareholder²³; and (3) its impact on the debt burden and associated credit rating of the South African government.

Our tax analysis considers the net effect of 1) company tax, 2) VAT, and 3) all other levies and taxes for the year²⁴. Eskom's total tax contribution based on its annual financial statements (AFS) was around R9.6 billion in FY18, down from a total of R11.3 billion in FY12.

Net-debt level, R billion



Note: Net debt for 2014 to 2018 calculated by adjusting gross debt for related payments made in advance, derivatives held for risk management and net market-making assets
 Source: Eskom AFS

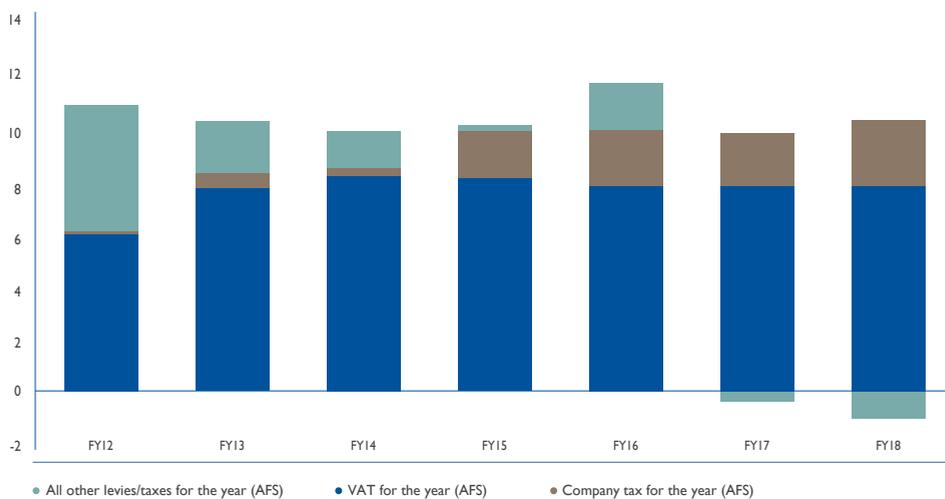
23. Measured as equity injections made by government/dividends paid to government over the period.
 24. Other levies/taxes include primary energy, environmental levy, treasury withholding tax and customs duty.
 25. While the absolute total tax contribution of R12.2 billion in FY16 was higher than the FY12 level, totals for all other years were below FY12 levels.

A decrease in corporate tax related to a reduction in earnings was the primary driver behind the lower tax figure over the period. Eskom's absolute contribution to taxes has therefore decreased over the period²⁵.

Secondly, contributions of Eskom to the government as shareholder can be measured by the net impact of dividends paid (positive) and equity injections (negative) over the seven-year period under review. In this regard, government made an equity injection of R23 billion into Eskom in FY16. There was also a conversion of a R29 billion loan to equity in FY16, in effect forgoing any interest on this loan in the future.

The third, and arguably most important, aspect considered is the impact of Eskom on government's debt burden and by implication its sovereign credit rating. Eskom's net debt burden increased significantly over the period from R143 billion (FY12) to R391 billion (FY18), with the major new infrastructure build programme undertaken over recent years being a major driver in this²⁶. The majority of this debt is now guaranteed by the South African government. Whereas only 42% of Eskom's debt was guaranteed in FY12, 62% was guaranteed in FY18 – equal to more than R242 billion of Eskom's net debt burden. Coinciding with this increased debt burden, Eskom's credit rating across all major rating agencies has dropped significantly over the period²⁷. The substantial

Company, VAT and other levies/taxes per annum, R billion



Note: Other levies/taxes includes primary energy environmental levy plus treasury withholding tax plus custom duty.
Source: Eskom AFS

amount of debt guaranteed by the government poses a significant risk to the South African economy. In the event of default, cross default provisions on other government debt would potentially be triggered which could have severe knock-on effects and place pressure on the fiscal framework. It has been reported that Eskom debt being called in could collapse the economy.

In summary, our three main criteria for contribution to public finances all suggest that Eskom has had an increasingly negative effect on government finances between FY12 and FY18. Total tax contributions have decreased, significant cash injections were made by government to sustain operations, and most notably the absolute debt levels and exposure held by government have increased rapidly. The combination of these factors places significant strain on public finances.

Eskom's recent operational performance has undoubtedly added to its increased debt burden and the pressure on public finances. However, the additional cost associated with Eskom's contributions beyond commercial imperatives should not be underestimated. Apart from its role as primary electricity provider, Eskom has a clear developmental mandate that involves significant social contributions beyond commercial imperatives. Eskom's contributions include direct social spend (CSI, donations, learnerships etc.), as well as implicit social contributions through its core business as a result of contractor and procurement requirements. This additional expenditure has an undeniably positive impact on the community, but also adds to Eskom's operational commitments and the pressure on its profitability.

26. It should also be noted that Eskom has significant debt owed to it by municipalities. Total invoiced municipal arrear debt increased significantly, to R13.6 billion (including interest) at year end (March 2017: R9.4 billion).
27. S&P's rating decreased from BBB+ (FY12) to CCC+ (FY18); Moody's rating decreased from Baa2 (FY12) to B2 (FY18); Fitch long-term (zaf) decreased from AAA (FY12) to BB- (FY18); and Fitch short-term (zaf) decreased from F1+ (FY12) to BB- (FY18).

Eskom identifies a clear action plan in its 2018 Integrated Report to address both lack of profitability and increasing debt burden. Specifically, liquidity will be managed through increased revenue through cost-reflective price increases from NERSA and increasing sales to energy-intensive consumers; cost containment aimed specifically at employee benefit spend, maintenance, and third-party spend; improved borrowings through the further utilisation of government guarantees; a clear strategy for the collection of municipal arrear debt; restricting capital expenditure; implementation of the recovery of RCA²⁸ balances; and balance sheet optimisation through working capital optimisation and the sale of non-core assets.

Employment

In FY18, Eskom group provided employment to 48 628 people²⁹, relative to 43 943 people³⁰ in FY12. These figures include employment provided at an Eskom company level as well as its subsidiaries. Eskom consistently employed in excess of 40 000 people between FY12 and FY18, with the overwhelming majority of these appointed in permanent positions.

Another important element of Eskom's impact on employment to be considered are the third party contractors that Eskom employs in particular through its large scale capital expansion programme. It is estimated that Eskom provided employment to more than 124 000 people in 2017³¹ as a result of its own employee complement in operations plus third party contractors it had direct control over through its capital expansion programme³².

However, Eskom's impact on employment extends much further than its own operations and capital build programme. Many of the industries that Eskom supports as suppliers to its core operations can be considered labour intensive. The coal industry in particular stands out – Eskom purchased 115Mt of coal in FY18, approximately 45% of South Africa's total coal production for 2017. As a result, Eskom was directly responsible for more than 30 000 job opportunities in the mining and quarrying sector in 2017.

Over and above Eskom's support of the coal industry, Eskom spent more than R25 billion in FY18 on other products and services used in daily operations, ranging from repairs and maintenance, transport and other business services. This expenditure again supports a large number of suppliers and jobs at various skill levels across

the economy. If one considers the employment impact of Eskom's own operations, capital build programme and its direct expenditure on suppliers, Eskom provided employment to more than 275 000 people in 2017³³.

If one considers only the estimated 124 000 jobs associated with Eskom's own employee complement and the third party contractors it had direct control over in 2017, this is equivalent to 0.78% of total South African employment. Furthermore, if one assumes on average that each one of these people supports three other family members, these jobs support approximately 496 000 people.

Other employment related indicators for Eskom also reflect positively during the period under review. Remuneration packages for bargaining unit employees at Eskom have kept track with inflation over the seven-year period (FY12 to FY18), increasing by on average 6% per annum. Turnover of employees at Eskom was comparatively low at 4.6% in FY18, relative to a corporate peer average of 13.4% and utility peer average of 6.1%.

Providing reliable, predictable and competitive electricity

The second pillar addresses Eskom's role and contribution to South Africa in terms of making electricity available, reliable, and affordable, as well as ultimately ensuring that customers are satisfied with the services provided.

Availability

Universal access to electricity does not currently exist in South Africa, with an estimated 1 million households without access to power. However, if one considers the country's position at the start of the major electrification programme – significant strides have been made. Eskom has been instrumental in supporting the government's objective of advancing electrification in South Africa. At the start of the electrification programme in 1991, only approximately 34% of households had access to electricity. Since then, Eskom has helped to electrify approximately five million homes, resulting in 90% of South African households having access to electricity by the end of the 2018 financial year.

Comparing South Africa to other African countries³⁴ also shows a positive picture where South Africa is clearly ahead of the curve.

28. The Regulatory Clearing Account (RCA) is a balancing mechanism between what was awarded by NERSA on the basis of a forecast through the multi-year price determination (MYPD), and what actually materialised (Eskom's audited financial statements).

29. 40 572 permanent employees and 744 fixed-term contractors (FTCs) at an Eskom company level plus an additional 5 478 permanent employees and 1 834 FTCs at its subsidiaries.

30. 40 802 permanent employees and 400 FTCs at an Eskom company level plus an additional 2 671 permanent employees and 70 FTCs at its subsidiaries.

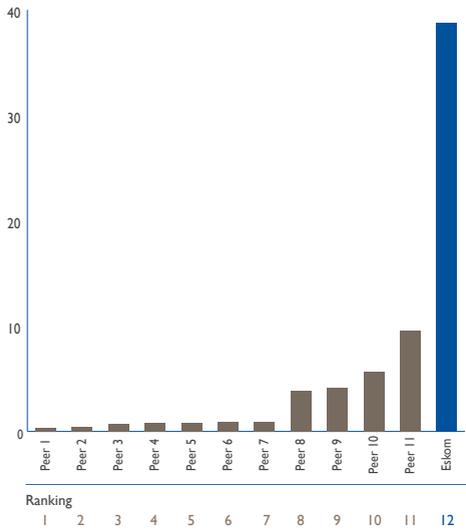
31. Employment estimates by Quantec. Estimates provided for total employment (formal plus informal employment). Detailed methodology and assumptions in the appendix of this report, from page 44.

32. This compares to employment of more than 158 000 in 2011, with the difference in 2017 primarily the result of lower capital expenditure and associated construction employment.

33. The comparable figure for 2011 is estimated to be 315 000.

34. African countries have an average electrification rate of 51%.

System average interruption duration index (SAIDI), hours



Source: 2017/2018 company integrated reports and sustainability reports

Considering the transmission component, Eskom's system minutes lost <1 minute for FY18 was 2.09, which is both a significant improvement relative to the FY12 figure of 4.73 minutes as well as being under Eskom's stated target of 3.53³⁶. No major incident >1 minute was recorded in FY18 compared to one incident in FY12. The target listed in Eskom's KPIs is two per financial year.

Another measure of predictability is the energy availability factor (EAF) which reflects the plant or unit's availability to produce energy as a percentage of the energy that could have been produced at full capacity over the reference period. The EAF for FY18 was 78%, which is in line with the 2017/2018 Eskom target, but down from 82% in FY12.

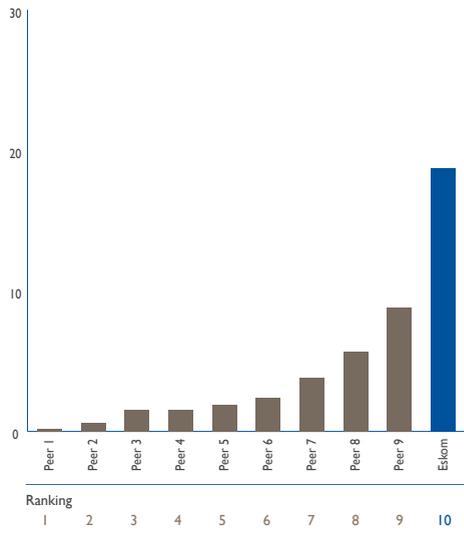
In the South African context, the experience of predictability and reliability of electricity can be vastly different depending on location. For example, outages may last longer in rural areas given that it takes time to travel to these places for repairs to be effected.

In short, Eskom has made efforts to improve predictability of electricity as shown by the positive trend in the major indicators. Still, SAIDI and SAIFI lag significantly behind international peers, and there remains room for improvement.

Pricing and competitiveness

Eskom's recent application for an increase in tariffs by 15% per annum has been met with widespread criticism from individuals, civil society groups and opposition parties³⁷.

System average interruption frequency index (SAIFI), events



Electricity tariff setting is regulated by NERSA based on a methodology that focuses on the cost of supply. While Eskom is responsible for most of the electricity generation in the country, it only sells and distributes 54% of national power to end users, with the remaining 46% being sold and distributed by around 180 municipal power departments. The municipalities purchase electricity from Eskom at wholesale prices to which they add the costs for distribution infrastructure as well as a profit margin. Given the current distribution structure, municipal tariffs can and do appear to differ widely. In many instances the price paid through the municipality is significantly higher than the equivalent tariff an Eskom customer pays. For example, research has shown that 'a medium-sized foundry pays 30% more for electricity in Ekurhuleni per kilogram of output than a similar foundry sourcing power directly from Eskom'.³⁸ While prices increases can have a significant impact on the profitability of businesses, the unpredictability of the increases is an additional burden for corporate customers who need to plan and budget.

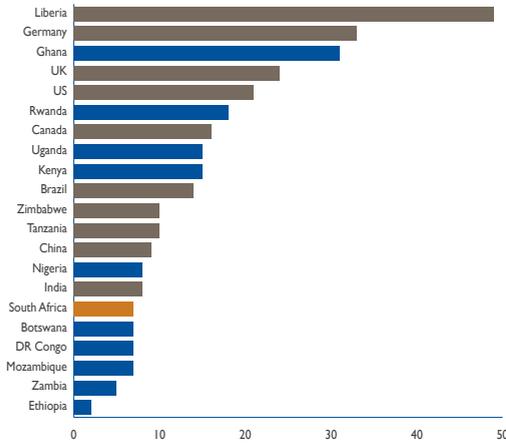
In terms of Eskom's direct pricing to customers (as opposed to prices charged by municipalities), average prices increased by 9.8% per annum since 2012, exceeding CPI inflation over the same period by about four percentage points per annum. At a disaggregated level, the price of electricity for residential, commercial and mining customers has increased at approximately 7.3%, 9.7% and 10.4% per annum respectively, with absolute increases between 2012 and 2018 ranging from 53% to

36. System minutes are a global benchmark for measuring the severity of interruptions to customers. One system minute is equivalent to the loss of the entire system for one minute at annual peak.

37. <https://businesstech.co.za/news/energy/268639/south-africans-cant-afford-to-pay-15-more-for-eskoms-mismanagement-and-corruption/>.

38. <https://mg.co.za/article/2018-05-22-south-africas-municipal-electricity-tariffs-are-hurting-the-economy>.

Price of electricity per kWh, US cents per kWh (2017)

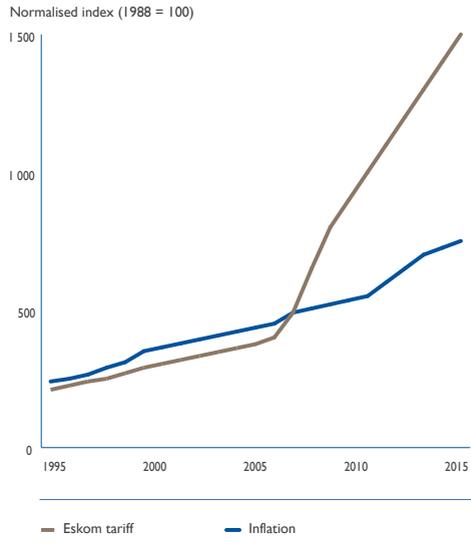


Source: Statista, Eskom, statssa.gov.za

80% over the period. The price increases are primarily driven by Eskom's rising costs of electricity production, as well as external policy which impact levies and IPP purchases. Both Eskom's primary energy expenses (mainly coal, IPPs, and environmental levies) and the employee benefit expense increased by more than 10% per annum over the same time period. This suggests that the price increase is driven equally by market dynamics, policy and internal Eskom factors. Another influencing factor on the recent price increases is that electricity was historically underpriced and increased at lower than CPI inflation before the late 2000s. This suggests that the current steeper price increases which consumers face today is partly to compensate for lower historical increases.

Based on these figures one can understand the concerns around increasing electricity prices. However, it should also be noted that South Africans still have access to competitively priced electricity compared to other countries globally (including African countries). In 2017 the average price of electricity for South Africa was 7 US cents per kWh against an average of 15 US cents per kWh internationally. This applies to both industrial and residential customers. The caveat is that some of the countries included in this comparison have a higher GDP per capita than South Africa. Due to steep price increases, South Africa is losing ground to these countries in terms of affordability. However, even when factoring in average household income, South Africa still performs better than average. This conclusion is consistent whether considering only African countries or a broader group of international peers.

Evolution of electricity price versus CPI inflation in South Africa



Source: Statista, Eskom, statssa.gov.za

Reducing Eskom's impact on the environment

The third pillar addresses Eskom's impact on the environment through the use of resources, specifically water; emission of greenhouse gases; effects of pollution on air quality; use of renewables; efforts to improve end-user energy efficiency; and biodiversity.

Water use

Coal and water are the most common resources used by Eskom for electricity generation. Other resources such as uranium, kerosene, diesel, and fuel oil are also used.

In FY18, Eskom burnt 115.4Mt of coal, which is almost half of the total coal produced in South Africa (252Mt). In absolute terms, this is a reduction of 10Mt against FY12. However, this is solely driven by a lower output in the latest year as the kg/kWh produced has remained level over the period. The main by-product of coal-based electricity generation is the ash created through burning coal. The amount of ash produced has decreased slightly, even relative to the decline in coal use, as the ratio of kg ash produced to kg coal burnt has declined from 0.29 to 0.27. The percentage of ash recycled also increased from 6.4% to 8.6% in FY18.

While fuel oil use increased by 44% from FY12 to 313 million litres in FY18, the use of diesel dropped dramatically from 222 million litres in FY12 to 37 million litres over the same period. The use of nuclear fuel also increased over the period, with the 60 units³⁹ used in FY12 increasing to 116 in the latest financial year. This being said, the amount of low-level radioactive waste generated has declined by 1.9% per annum between FY12 and FY18, while intermediate-level radioactive waste generated declined by 3.3% per annum over the same period.

39. The gross mass of a nuclear fuel element is approximately 671kg, with uranium dioxide (UO₂), mass typically between 462kg and 464kg.

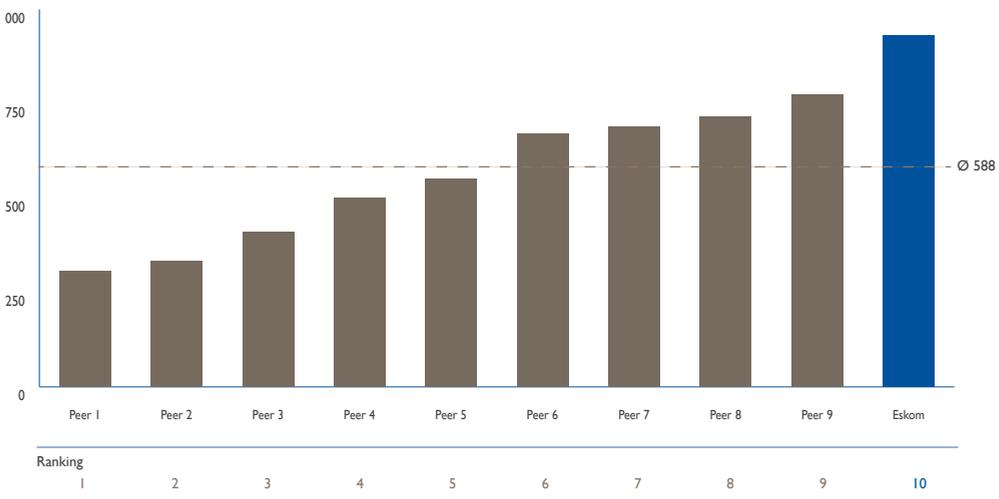
As a result of its coal-dominated generation mix, Eskom also requires significant quantities of water. There are two measures for the level of water use: firstly the net raw water consumption, and secondly the specific water consumption in ℓ/kWh sent out. Based on both of these metrics, Eskom has made improvements. In FY18, Eskom recorded the lowest value since FY12 on both these metrics. The FY18 Eskom Integrated Report states that “continued focus on station-specific water strategy implementation plans, water data audits, as well as a focus on improving water management, contributed to the improved performance. The reduction in energy generated by older power stations, which are less water efficient, has also reduced specific water use.”⁴⁰ While this improved performance is positive, Eskom still uses a substantial amount of water in absolute terms. While all industrial users of water account for approximately 9% of total South African water usage, Eskom alone accounts for 2% of South African water usage⁴¹.

Greenhouse gas emissions

The high dependence on coal for electricity generation by Eskom (and South Africa), results in a significant environmental footprint. From FY12, Eskom reduced emissions by 26Mt to a total of 206Mt in FY18. The reduction was driven by a slight reduction in kilograms of CO₂/kWh⁴², as well as lower total electricity produced, which does not indicate an increase in efficiency.

When benchmarked against a set of peers, Eskom has the highest CO₂ emissions per kWh of energy produced (0.93 kg/kWh versus an average of 0.59 kg/kWh)⁴³. While this is highly influenced by the large proportion of coal in the Eskom energy mix, the emissions are still on the high end when compared to coal specific emission factors of Organisation for Economic Cooperation and Development (OECD) member countries.⁴⁴

Total CO₂ equivalent emissions per kWh produced¹, g/kWh



1. Total grams per kWh produced. Figure for FY18 of g/kWh sold is 970
Source: 2017/2018 company integrated reports and sustainability reports

40. Eskom 2018 Integrated Report.

41. BCG water analysis: 2030 Water resources group, Department of Water and Sanitation 2015, NPC diagnostic water report 2015.

42. Eskom’s value for FY18 based on sales of electricity is 0.97kg/kWh. This figure is calculated based on total electricity sales by Eskom. Electricity sales consists of total kWh available for distribution (including purchases), after excluding losses through transmission and distribution (technical losses), losses through theft (non-technical losses), Eskom’s own internal use and wheeling. CO₂ emissions per kWh of sales is therefore 205.5Mt of CO₂ divided by 212.190GWh sales = 0.97 tons per MWh.

43. For benchmarking purposes, production of electricity and not sales is used to ensure consistency.

44. International Energy Agency, CO₂ Emissions from fuel combustion, Highlights.

It is important to consider three facts when discussing Eskom's impact on the environment and its ability to reduce it. Firstly, Eskom's energy mix is determined through the IRP. So long as coal remains a dominant part of the energy mix, it implies CO₂ emissions will continue to be high.

Secondly, it is important to consider that most of the renewable energy delivered through IPPs relies on the base load being provided through Eskom's coal-fired power plants – this is detailed under the renewables section of this report.

Thirdly, the use of coal against other energy sources presents difficult trade-offs to the country. The first trade-off relates to affordability. The average cost of Eskom's electricity production (all sources of energy) is R634/MWh, with the primary energy unit cost of coal electricity amounting to R309/MWh. This is significantly less than the current cost of IPP purchases (R2 222/MWh). This is however a short term view, as coal power station infrastructure in South Africa already exists. In future, new coal power stations would need to be built, and the cost of renewable energy is expected to decline over time, with the result that the gap between the two will narrow over time.

The second trade-off relates to the coal mining industry. Reducing coal use would limit both industry output and associated employment given that Eskom remains the largest purchaser of coal in South Africa⁴⁵. The coal mining industry remains an important provider of employment in the overall South African mining industry, estimated to employ 82 248 people in 2017, an increase from the 60 187 people employed in 1994. The employment provided by the coal industry is even more important considering that overall employment from the mining industry is estimated to have decreased from 611 018 in 1994 to 462 870 in 2017⁴⁶.

Air quality

Eskom is also responsible for the emissions of SO_x, NO_x, and particulates that impact the environment at a local and regional level. This is a direct result of its extensive use of coal-fired power stations.

The absolute amount of SO_x, NO_x and particulates emitted declined between FY12 and FY18, with lower energy output as a key driver. While emissions per MWh produced went down for NO_x (4.1 versus 3.9kg/MWh), it increased for SO_x (7.8 versus 8.1kg/MWh) since FY12 on a normalised basis. Compared to peers, the relative emissions are about four times higher on both dimensions. In absolute terms, the particulate matter emissions from power plants reduced from 72.42kt/year (FY12) to 57.13kt/year (FY18).

Eskom is bound by the National Framework for Air Quality Management set out by the Department of Environmental Affairs (DEA). This includes standards for air quality monitoring and management planning, and to this end Eskom has progressed with its air quality improvement programme. Based on their remaining life and the impact on ambient air quality of potential improvements, power stations are prioritised and retrofitted in phases with a variety of emissions-reducing technologies. Some of the upgrades being conducted include:

- The installation of low NO_x burners – this has taken place at Camden power station, and is in progress at Tutuka, Majuba and Matla.
- The retrofit of fabric filter plants at multiple power stations.
- The installation of a high frequency power supply on all six units of Lethabo is under way.

As the older power stations are phased into cold reserve over time, the new plants replacing them, such as those under construction at Medupi and Kusile, are being fitted with low NO_x burners and flue-gas desulphurisation. As a result, the mix of power stations is becoming cleaner over time from an air quality perspective. In addition to this, an air quality offset plan is in place, focusing on interventions to switch households from cooking and heating with coal. Another aspect of this plan is health monitoring. This will take place in communities to measure the success of these interventions over time.

While the above measures will mitigate Eskom's impact on the air quality, Eskom is currently not in compliance with Minimum Emissions Standards (MES). It is noted that Eskom did, through the legally set out process, obtain postponements in 2014/15, and is lodging applications to the National Air Quality Officer for suspensions, alternative emission limits and postponement for some of the power stations emission limits. The reason for these applications is in most cases due to design-related limitations of power stations that were constructed (or had commenced construction) before the promulgation of the MES. The substantial cost of certain required technologies would also impact the cost of electricity.

End-user energy efficiency

To combat the negative consequences of fossil fuel usage on the environment, Eskom attempts to reduce usage from end-users as well as drive internal efficiencies. By way of integrated demand management, Eskom has realised demand savings between 172MW and 595MW per year since 2012. Additionally, through internal efficiency measures Eskom has saved between 1.4GWh and 45GWh over this period.

45. Coal usage would reduce as coal-fired power stations are replaced by alternative energy sources over time so the decrease would not be immediate, but instead phased over time.

46. Department of Mineral Resources (DMR).

Renewables

As mentioned in “Greenhouse gas emissions” from page 20, the Eskom-specific energy mix is largely dominated by coal (accounting for more than 91% of the total energy generated in FY18). The remaining energy mix is distributed between 6% from nuclear, 0.5% from renewables, and the remainder from pumped storage and open-cycle gas turbines. The share of renewables within the Eskom energy mix is clearly limited.

Eskom’s energy mix is determined through the IRP, which implies coal domination is government policy driven. Eskom also has limited ability to change the energy mix in the short to medium term, as it relies on power plants which have already been constructed. Eskom itself is currently not permitted to participate in the RE-IPP programme, although it does provide the RE-IPPs connection to the main transmission grid. Eskom also enables renewable IPPs to operate intermittently by providing base load capacity, and balancing supply to meet the hourly system demand.

While coal-powered generation is not the only means of providing a stable base load, it is currently playing this role in South Africa where other options such as large-scale hydro are not feasible. While additional gas capacity is planned, a large nuclear build is not considered financially viable at this time, according to the 2018 draft IRP.

From a broader country perspective, while the renewables capacity is only 7.6% of the total nominal capacity of Eskom and IPPs, the evolution of renewable energy in South Africa should not be underestimated. Between 2008 and 2017, the renewables capacity of South Africa increased by 21.8% per annum. This substantially surpasses several other large economies in Africa, including Morocco (6.9% per annum), Kenya (6.8% per annum), and Nigeria (0.7% per annum), with the average for African countries being 6.8% per annum⁴⁷.

Hence, even though Eskom does not produce much renewable energy itself, it does create the platform for others to do so, and in doing so enables the country to move towards a cleaner energy mix.

Biodiversity

In terms of biodiversity, one typically considers the damage that Eskom causes to species and ecosystems because of its activities. An example of this is that Eskom tracks the reported mortality of “red data” (threatened) bird species on Eskom distribution lines. Over the last couple of years, the number was fairly stable at 200 to 300 known mortalities per year. The only exception was 2017 when over 500 mortalities were reported. It should be noted that this number is likely understated, as not all lines are monitored. Furthermore, deaths of non-threatened species caused by distribution lines, and deaths of all birds (threatened and non-threatened) caused by transmission line collision are not measured.

As detailed in “Contribution to GDP” from page 13, Eskom has an indirect negative impact through its supply chain. For example, open cast mining which is largely driven by Eskom’s demand for coal, has resulted in the destruction of Highveld grasslands which has an impact on both species and ecosystems.

A little known fact is that Eskom manages some of its vacant land as conservation areas. Eskom has shown improvement in this regard since 2011, both in terms of hectares as well as percentage of total vacant land. In FY18, over 17 000 hectares of vacant land were managed under conservation practices. The conservation effort is often driven through partnerships, such as the Ingula Partnership which works to preserve the wetland habitat near the Ingula Power Station. This wetland habitat is home to a diverse ecosystem of fish and bird species.

Contributing to national transformation imperatives

The fourth pillar considers Eskom’s contribution to national transformation imperatives. Eskom’s overall B-BBEE score is considered, together with employment equity, and the contribution to local suppliers. Eskom’s size in terms of both economic value and number of people employed implies that it has the potential to be a major contributor to transformation.

Employment equity

Between FY12 and FY17, Eskom was consistently rated as either a level 2 or 3 B-BBEE contributor. As recently as FY17, it was certified to be a level 2 contributor. Eskom’s target in accordance with the shareholder compact is to achieve a level 4 B-BBEE rating. However, Eskom was rated as level 8 in FY18⁴⁸. This low rating is due to SOCs no longer being considered as black-owned under the revised B-BBEE Codes of Good Practice⁴⁹.

As at 31 March 2018, 85% of all Eskom employees were black, 34% were female, and 29% were black female; 3% of all employees had disabilities. These levels were all marginal increases on Eskom’s already relatively high historic employment equity contributions. Relative to the South African corporate peer group, Eskom’s black employee representation was higher than the average of 78.4%.

In terms of black representation in top management and senior management, Eskom ranked first in comparison to South African corporate peers. When considering female representation, while Eskom ranks second in senior management, it is amongst the lowest of the peer group for top management.

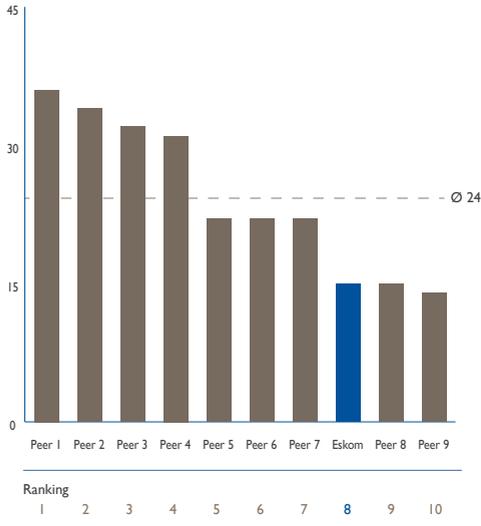
More specifically, black top management representation increased to 85% (FY18) from 72% (FY12). Both female (FY18: 15% versus FY12: 24%) and black female (FY18: 15% versus FY12: 21%) representation in top management

47. Figures for all countries obtained from IRENA Renewable Capacity Statistics, 2018.

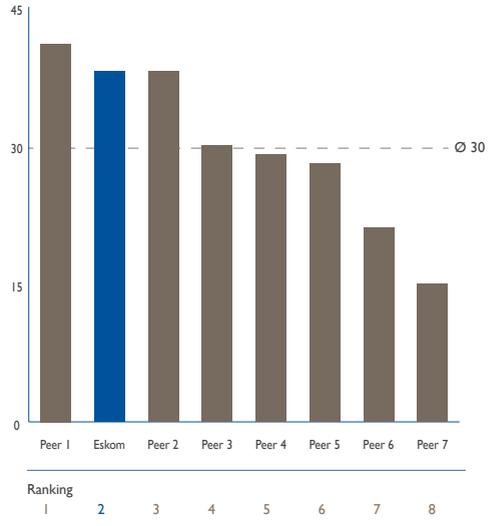
48. More specifically, until June 2018 when the relevant certificate expired.

49. Eskom Integrated Report, March 2018.

Female representation in top management amongst SA corporates, %



Female representation in senior management amongst SA corporates, %

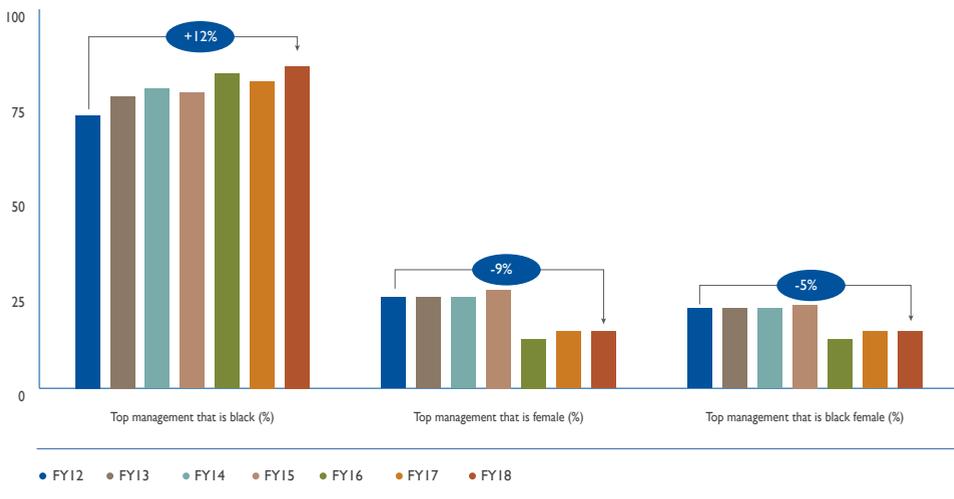


was down over the period. In FY18, 68% of senior management were black, 38% were female, and 33% were female and black – an increase of 14 percentage points for all categories relative to FY12. In FY18, 75% of middle management were black versus 66% in FY12, 38% were female (FY12: 32%), and 26% were black and female (FY12: 26%), an increase of 6% to 10% across these categories. Note that all employment equity figures are presented at the financial year end (31 March).

Contribution to local suppliers

Eskom's significant size in terms of both turnover and operational expenditure also implies that it is one of the largest procurers of goods and services in South Africa. While Eskom has been criticised in the past for the size and growth of its procurement spend, it can also act as a catalyst to transform the economy through spending on especially majority black- and women-owned businesses.

Top management representation, %

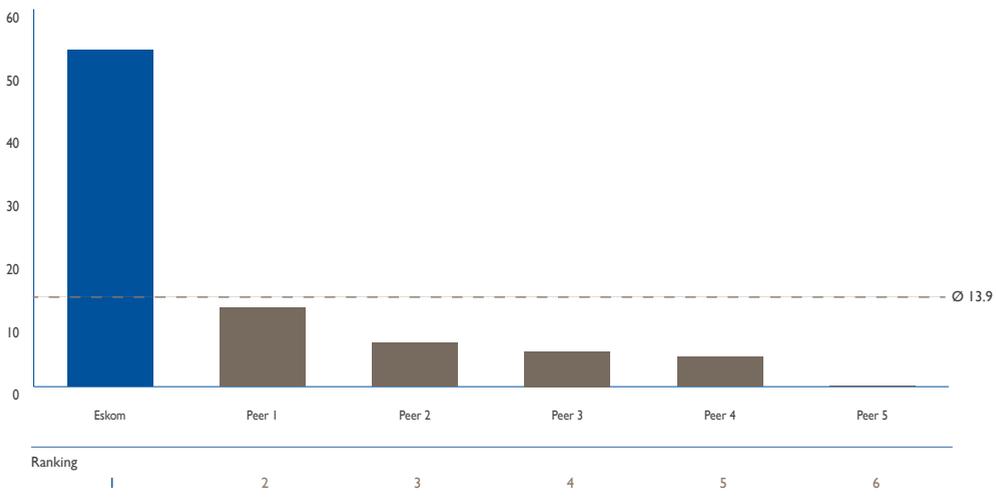


Total nominal procurement spend increased from R146 billion (FY14)⁵⁰ to R161 billion (FY18)⁵¹. Eskom's procurement spend on B-BBEE attributable suppliers was consistently above 80% between FY14 and FY17, but dropped significantly to approximately 60% in FY18. However, it should be noted that a major reason for this decrease in procurement from B-BBEE attributable suppliers relates to a change in the codes governing whether or not specific suppliers are considered B-BBEE attributable. Due to the implementation of the new codes, certain elements can no longer be claimed when calculating total measured procurement spend

(i.e. procurement from particular suppliers will no longer be considered B-BBEE attributable). Initiatives are being implemented by Eskom to address and improve the B-BBEE performance.

Eskom's relative procurement spend on majority black-owned businesses was 33% of total procurement for FY18. Eskom was by far the biggest contributor among South African corporate peers, spending R53.5 billion on black-owned businesses in FY18. This significant expenditure on black-owned suppliers is a particularly powerful tool in transforming the South African economy.

Spend on majority black-owned businesses, R billion



Source: 2017/2018 company integrated reports and sustainability reports

Procurement from qualifying small enterprises (QSEs) increased to 6.3% (FY18) from 5.2% (FY14), while procurement spend on exempted micro-enterprises (EMEs) increased to 7.6% (FY18) from 5.7% (FY14) based on available data.

Despite the decline in some areas, the absolute procurement spend on attributable suppliers, and other categories, is a substantial contributor to forwarding transformation.

Impacting on local communities

The fifth pillar addresses Eskom's role in and impact on South African local communities. We assess the impact through the lenses of investments in and externalities for local communities.

Investment in local communities

In June 2018, coal being transported from Exxaro's mine to Eskom's Arnot power station was blocked by local residents. This is one example of an instance

where residents were of the view that Eskom was not contributing sufficiently to the local community⁵². However, there are also various examples where Eskom has made substantial and very tangible contributions to the local community. To assess how Eskom performs from an overall perspective when it comes to investments in local communities, we consider local job creation and contracting at new build projects, CSI, infrastructure investments, and other activities such as electrification.

One of the largest contributions Eskom makes to local communities is through the employment created in the new build projects. At Medupi and Kusile alone, nearly 40 000 people were directly employed at the peak of construction. In FY18, the total supplier development and localisation (SD&L) spend of Eskom was R18.5 billion, creating significant stimulus to the local economy. This capital expansion not only fulfils the mandate to grow the supply of electricity, but is also an important contribution to Eskom's developmental role in South Africa.

50. Data for FY12 and FY13 was not available at the time of writing this report.

51. FY18 procurement decreased from the FY17 level of R165 billion.

52. <https://www.fin24.com/Economy/Eskom/angry-community-chokes-eskom-coal-supply-20180610-3>.

Eskom has positively impacted local communities through electrification of households – more than 215 000 in FY18, the majority of which are in rural areas – which not only provides convenience and comfort, but also reduces indoor pollution and risks associated with burning of fuels.

In terms of CSI, Eskom spent R88 million in FY12 and has consistently spent more than this in each year since, with R192 million in FY18 (more than R1.05 billion over the period). As a percentage of revenue, Eskom has spent more every year since FY11 with the exception of FY16. Through its CSI activities, Eskom has made an impact on anywhere between 0.3 million to 1.1 million people and more than 282 enterprises over the period from FY12 to FY18. Compared to South African corporate peers, Eskom reports relatively lower spend (as % of revenue) on CSI (the average spend as % of revenue is 0.2% versus 0.11% for Eskom), however, this only includes the CSI spent through the Eskom Development Foundation. Eskom invests far more than this in socio-economic development through new build projects and its different line divisions. The largest of these projects have been at Medupi, Kusile, Ingula, the Majuba rail project, as well as the various Transmission infrastructure development projects.

Over R2.1 billion has been spent on local infrastructure projects at Medupi since the inception of the project (August 2007), with the majority of this investment being R1 billion spent on new housing and a further R750 million on the contractor village. Further to this, over R204 million has been invested in road infrastructure and bridges. Additional projects have included the development of electrical infrastructure, a sewage plant, schools, community centres, and public buildings such as police cabins, clinics, and wellness centres. There have been several large non-infrastructure projects, such as enterprise development and the Medupi Leadership Initiative described in the case study detailed alongside.

Eskom has invested more than R200 million on CSI initiatives at Kusile to date. These initiatives have focused primarily on the building and renovation of schools (117 schools renovated), and have also included the building of other public infrastructure such as a police station and clinic. Other initiatives at Kusile include co-operatives aimed at skills transfer and up-skilling of individuals.

Other community development initiatives Eskom has participated in across the country include the construction of old age homes, and the donation of labs, computers, and educational tools to schools. Eskom also invests in providing other basic services within these communities, such as electricity and potable water.

Considering all of the above, Eskom has made a significant social contribution in South Africa and, in particular, actively seeks to add to the development and upliftment that surround its new infrastructure projects. Though the reported CSI through the Eskom Foundation is relatively low, the overall Eskom contribution to local communities is significantly higher.

i

Case study: The Medupi Leadership Initiative

Due to the nature of large build projects such as Medupi, the employment created is often temporary and peaks during the construction phase of the project. People employed by these projects are demobilised once the project phase is complete, which can lead to instability in the local community. The Medupi Leadership Initiative (MLI) was established in partnership with the private sector to create a sustainable long-term solution for job security in the area of the Medupi build, which could be used as an example for other large-scale infrastructure projects. The MLI aims to reintegrate demobilised workers back into the community and 'build a bridge to future employment opportunities'.

The MLI focuses around three major areas: creating short- and medium-term transitional job opportunities for local demobilised and community participants; providing training and development opportunities for local people that enable future employment or entrepreneurship; and identifying and applying development finance opportunities. This has resulted in more than 16 000 people being trained in financial literacy, and over 1 000 job opportunities being created. Some examples of these are:

- The small-, medium- and micro-enterprise (SMME) hub which has incubated over 35 SMMEs
- Drylands projects which have created employment for 444 individuals
- Smallholder farmers project which has registered 730 farmers
- Enterprise development for over 150 SMMEs

Lessons learned from the projects so far will continue to be implemented at Medupi as the construction phase draws to an end, as well as at future capital infrastructure projects.



Externalities for local communities

While Eskom contributes positively to local communities in many ways, there are also negative externalities deriving from Eskom's presence around communities.

One of the key issues is the reduction of air quality for the people who live around power plants. Although the level of pollution produced is highlighted under Eskom's impact on the environment, the health effects of high ambient air pollution can be substantial. Pollution in priority areas⁵³ is reported to cause respiratory conditions such as bronchitis and asthma, and can even lead to death⁵⁴. These impacts are partially mitigated through retrofits to coal-fired power stations which reduce the emissions, thus reducing Eskom's contribution to ambient air pollution.

Another issue relates to relocation of families as a result of Eskom's power generation projects and expansion of the national power grid. At many of the major build projects, such as Medupi, Kusile, and some of the transmission-line projects, it is necessary for Eskom to build in areas where local communities exist. This can result in local

communities needing to be relocated. Since 2011, a total of 746 households have been asked to relocate from their original homes⁵⁵ to alternative accommodation.

Being asked to relocate is a very difficult move for people as they have a strong sense of belonging within their communities, and may depend on the social structures which exist in them. In addition to the location of people, disruption is also caused when certain sites of significance to the community need to be moved. Eskom acknowledges this and does its best to manage this process to minimise the negative impact. Not only does Eskom provide a substantial financial compensation for those affected by the relocations (R327 000 on average), but support is also provided in other ways, such as counselling. One example of relocation from the Venus substation transmission line can be seen in the case study below. Other related impacts to communities are in cases when graves sites need to be moved or get disturbed during the construction of Eskom's infrastructure, such as in the case of the Medupi Power Station.

i

Case study: The Ariadne Eros and Venus transmission lines

Two of the major build projects which have resulted in the relocation of people have been the lines from the Venus substation to Ariadne as well as the lines from Ariadne to Oribi and Eros, a total of over 400km of transmission lines. Between these projects, roughly 250 households have been relocated so far, due to the households being in the planned path of the transmission lines and the areas being deemed unsafe for continued habitation.

In order to address this, a resettlement action plan has been put in place for both projects in partnership with the African Development Bank (AfDB). For each house which needed to be relocated, the policy was outlined that the affected family should be better off after the disruption than before. The impact to each affected party was individually assessed with special attention paid to vulnerable families within the community, with social monitoring taking place to ensure that all of the beneficiary's interests were considered, and to make sure that benefits were distributed in a fair manner.

The relocation project was of course disruptive to the communities, but the resulting houses which were built with the compensation were life-changing improvements for many families.

53. Priority areas exist when the Minister or MEC reasonably believes that ambient air quality standards are being, or may be, exceeded in the area, or any other situation exists which is causing, or may cause, a significant negative impact on air quality in the area.

54. Groundwork: http://www.groundwork.org.za/archives/2018/news20180315-Eskom_again_seeks_to_delay_compliance.php.

55. Relocations were mostly the result of concerns around air quality or the construction of distribution lines.

Being a good employer

The sixth pillar addresses Eskom's impact as one of the largest employers in South Africa. To determine this impact, we assess relations with organised labour, the wellness and safety of employees, as well as the employee value proposition.

Labour relations

The relationship with labour is considered by focussing both on Eskom's relations with organised labour unions and internal relations with employees.

The three major trade unions of Eskom employees are NUM, NUMSA and Solidarity, which collectively represent over 28 000 employees within Eskom as of March 2018. These unions as well as some non-members form part of a collective bargaining unit within Eskom which encompasses over 80% of total Eskom permanent employees. Although the absolute size of the collective bargaining unit has decreased over the period of this report, a larger proportion of this unit is now represented by unions.

Eskom reported specific disputes between itself and labour representatives during 2018⁵⁶. Disputes are a common process through which stakeholders can raise their concerns with management, yet it is concerning for Eskom that conciliation attempts have not been successful in reaching resolutions for these disputes. This has led to arbitration being required from the Council for Conciliation, Mediation and Arbitration (CCMA). A major contention has been

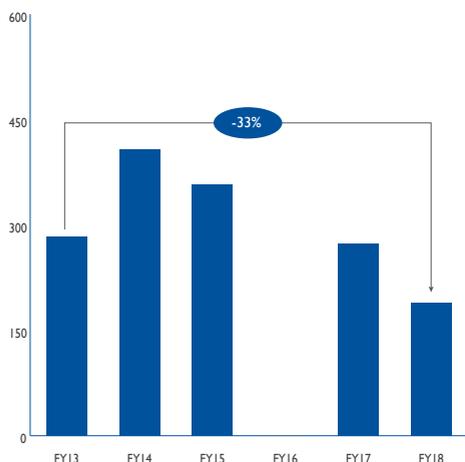
the negotiation to determine the next three years of wage increases. Due to financial pressures to reduce employee costs, management offered a 0% increase during the negotiations in June 2018. This was rejected by the unions, leading to widespread protest and strike action. The detrimental effects of this were felt across South Africa through the implementation of rotational loadshedding associated with the abovementioned dispute and related action by employees.

Internal relations between management and employees remain difficult, however show a more positive trend, as reflected in the number of employee grievances which have decreased by 33% since 2012. More critically, the proportion of grievances which have been solved internally has been increasing significantly during the same time, thereby reducing the need for external intervention.

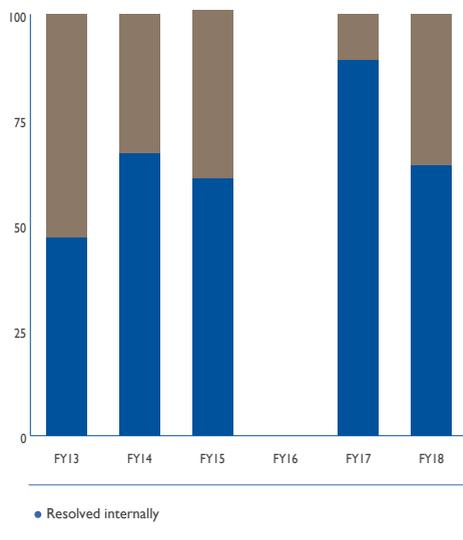
These improvements reflect the effectiveness of management structures put in place to improve resolution processes. In measuring this, each department submits an annual employee relations scorecard, including measures such as grievances resolved, and disciplinary actions resulting in sanctions.

The two aspects of labour relations tell a mixed story. On the one hand, the internal relations with employees show significant improvement. Yet, as evidenced by the strike action, there is still progress to be made in the relations with labour unions.

Total grievances lodged by employees, number



Proportion of grievances solved internally, %



56. As reported in the Eskom 2018 Integrated Report: NUM, NUMSA, and Solidarity lodged a dispute with the CCMA, seeking a ruling that Eskom should have a single bargaining unit for all its employees, or alternatively two bargaining units – one for bargaining unit employees and one for managerial employees. The CCMA issued an arbitration award in April 2018, finding that the current bargaining unit should be extended to include certain levels of professionals and middle management employees. In addition, trade unions are seeking a CCMA ruling that Eskom is not entitled to use temporary employment service providers or subcontractors.

Employee wellness

There is a major drive within Eskom to promote a healthy organisation through employee wellness. One aspect of this is the mandated requirement for employee health checks and physical fitness for duty assessments. These checks are conducted for all employees every two to five years dependent on their function in the organisation. There are also various voluntary initiatives to promote employee health and wellbeing, including health screening, physical wellness programmes, and psychosocial services.

One of these initiatives is the “know your numbers” programme – a health screening initiative which has been running in Eskom since 2014. This programme includes the screening of five key health metrics: blood pressure, glucose, cholesterol, BMI and waist circumference. It is designed to promote good health and improve awareness while removing the stigma around health issues. HIV awareness is a critical aspect of employee health in South Africa, and survey results show that 87% of Eskom employees are aware of their HIV status. This is in the top quartile of South African companies benchmarked, yet there is still room for improvement to achieve the United Nations (UN) target of 90% awareness by 2020.

Two of the major issues facing these initiatives have been budget constraints and a lack of centralised tracking. As a result, Eskom has relied on various branches and NGOs to conduct screenings and assess performance across the country. However, there is a drive to centralise this process, with an aspirational goal of 100% coverage of employees over three years (33% per year). In FY18, 11 169 full-time employees were screened for at least three out of the five tests, falling short of the target at roughly 27% coverage. It should be noted that there are instances where screenings take place but are not officially recorded.

Among the other services provided by Eskom are programmes focused on sports and recreation to promote physical wellness. This includes 13 gym facilities around the country, which are used for both physical rehabilitation as well as recreational fitness. Eskom also runs an Employee Assistance Programme (EAP) with psychosocial services, including counselling, financial wellness, and trauma assistance. Between 2016 and 2018, an average 11.7% of employees utilised these services per year. This is higher than the public sector average (10.7% in 2018).

Eskom compares favourably in employee wellness relative to other South African companies, specifically as a result of the broad voluntary wellness programmes offered and encouraged throughout the company. Still, there remains room for improvement, especially if one considers the targets set both internally and by the UN.

Fatalities

Under safety, we consider both the number of fatalities due to Eskom activities, as well as the frequency of injuries to employees and contractors.

Despite the organisation’s continued commitment to strive for Zero Harm, there were regrettably 15 employee and contractor fatalities in FY18. There were also 26 public fatalities related to Eskom activities, including from electrical contact and Eskom-related road accidents. Eskom has made substantial investments to reduce the number of safety incidents. The results are evidenced by the reduction of incidents over the past six years. However, the number of employee and contractor deaths per 1 000 employees (0.31) is still high compared to peer utilities (median 0.23).

A universal metric for employee safety conditions is the lost-time injury rate (LTIR). LTIR measures the number of lost-time injuries per 200 000 hours worked. Eskom has shown significant progress in decreasing this by over 50% since 2012 excluding occupational diseases, and over 40% if occupational diseases are included. Despite having higher than average fatalities, Eskom has performed well in terms of LTIR compared to other utilities. The current LTIR level sits at 0.20⁵⁷, compared to the international utility benchmark average of 0.28 and Eskom’s own target of 0.31. An explanation for this apparent contradiction is the significant proportion of road accident related deaths, in which South Africa has a particularly poor record⁵⁸.

One potential reason for the improvement in safety is the increased number of safety trainings conducted. Since 2013, over 30 000 employee safety trainings have been conducted per year. There have also been targeted initiatives to reduce some of the major causes of incidents, including:

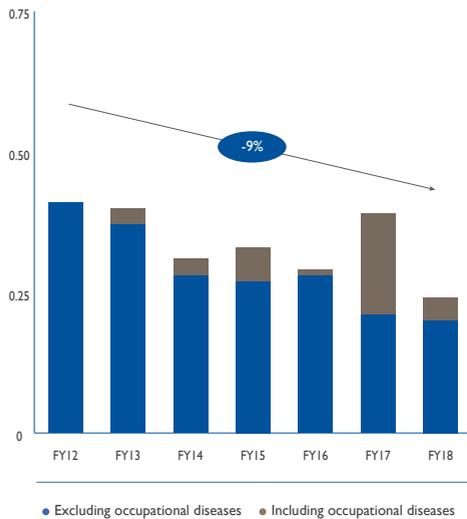
- Road safety and driver trainings/assessments
- Education around electricity safety
- Appointment of technical specialists to improve safety of working at heights
- Communications to improve safety awareness

Despite the investments in safety and positive trends seen, further improvement is required to attain the goal of Zero Harm. As a result, safety is still considered an area with a mix of positive and negative aspects.

57. Excluding occupational diseases.

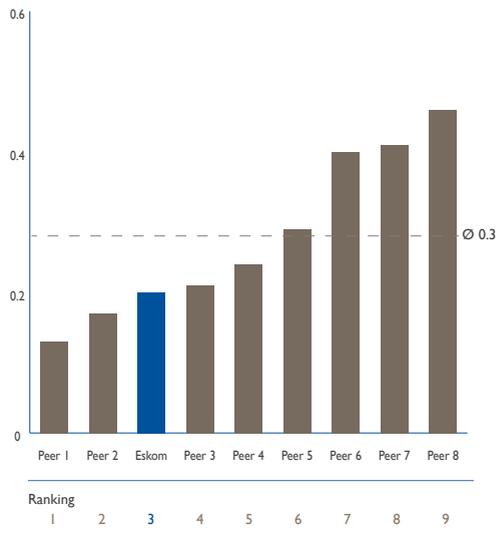
58. According to the International Transport Forum Road Safety Annual Report 2018.

Eskom LTIR¹ from FY12 to FY18



1. Incidents per 200 000 hours worked
Source: Eskom internal data

LTIR¹ amongst utility peers



Employee value proposition

In order to be considered an employer of choice, it is critical for Eskom to continue to attract and retain top talent. According to a Universum⁵⁹ survey of over 45 000 students and over 20 000 professionals across South Africa, Eskom is considered a preferred employer by prospective talent. This is especially true in the engineering and technology fields, where Eskom ranks as the number one employer of choice for students in 2018, and the number three for working professionals. Eskom also ranks highly for students in the business and commerce fields, where it ranks in the top 10 choices, although it should be noted that Eskom rates as less attractive in other fields.

One indicator of employee value proposition from within the company is the level of employee turnover. In combined voluntary and involuntary employee turnover, Eskom compares favourably to both other South African employers and global utilities, with only 4.6% employee turnover in 2018. This is not necessarily an indicator of job satisfaction, however, as in the South African context this could be due to a lack of alternative opportunities in a similar industry.

Every year, Eskom conducts an employee engagement survey which tests the sentiment within the company along multiple dimensions. The results of this survey are compared across time and across divisions in order to highlight some of the key areas where sentiment is either very positive, or an area for particular concern. Across the Eskom group, “belonging” and “my job” score highly, as well as “safety” – although under the safety heading only 23% of employees within a particular division strongly agree that Eskom employees follow safety rules. Some of the more concerning areas are around career development and remuneration and recognition, where specific concerns include equal access to training and understanding how remuneration is determined. A pulse survey conducted in October 2017 showed that there was more concern among Eskom employees around organisational performance than around negative media attention, and that this concern is most prevalent between top and senior management.

59. Universum Global is an employee branding company that publishes company rankings based on an annual survey.

Building internal and external know-how

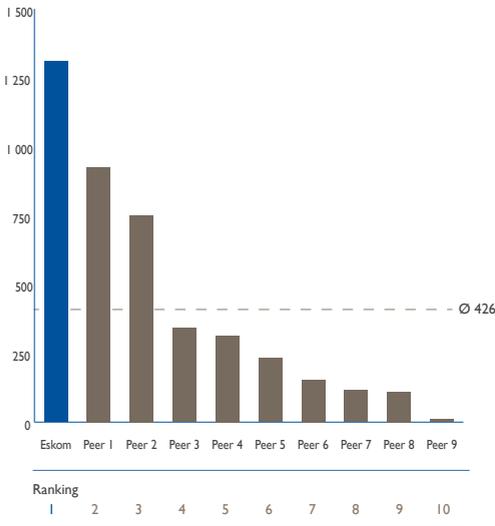
Over and above Eskom’s role as primary electricity provider and major employer in the South African economy, it has a key role to play in developing people (inside and outside Eskom) and driving innovation in the country. In this pillar, we consider Eskom’s contribution to: training and skills development; supplier monitoring and development; and driving innovation in South Africa.

Training and skills development

Eskom invested more than R11.4 billion in training and skills development between FY12 and FY18. In FY18, Eskom invested R1.4 billion in training and skills development, which included R504 million for training within the Eskom Academy of Learning

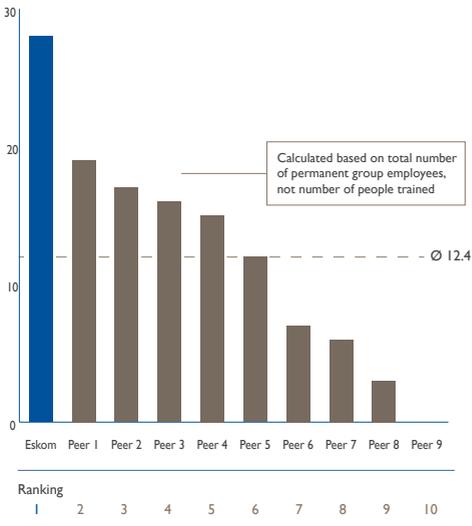
(EAL)⁶⁰, R612 million related to learners, R194 million for employee trainings and R132 million for bursaries and scholarships. Total training and skills development spend in FY18 was 5.2% of total employee benefits, down from 6.3% in FY12. However, Eskom still had the highest training and skills development spend per employee among the South African corporate peer group (approximately R28 000 per employee)⁶¹ – significantly in excess of the second-placed peer (approximately R19 000 per employee). As a result of Eskom’s company-wide training initiatives, 42 707 historically disadvantaged South Africans (HDSAs) received some form of training in calendar year 2017, an increase in absolute value of 38 993 in 2012.

Investment in employee training, R million



Source: 2017/2018 company integrated reports and sustainability reports

Investment in training per employee, R thousand



Calculated based on total number of permanent group employees, not number of people trained

A key component of Eskom’s training and skills development contributions are the learnerships it provides to engineers, technicians, artisans, and also some non-technical positions. Historically, Eskom has funded these learnerships not only to provide to the skills requirements of the company, but also to deliver more broadly to the skills needs of the South African economy. However, considering the recent drive within Eskom to create a more streamlined organisation, the focus has shifted primarily to providing to the needs of the Eskom business. Aligned with this, total new learner intake in FY18 was down to 726 individuals from 1 794 in FY12. Note that this followed a historically large intake of 2 448 individuals in FY17, particularly of engineers (824) and technicians (878).

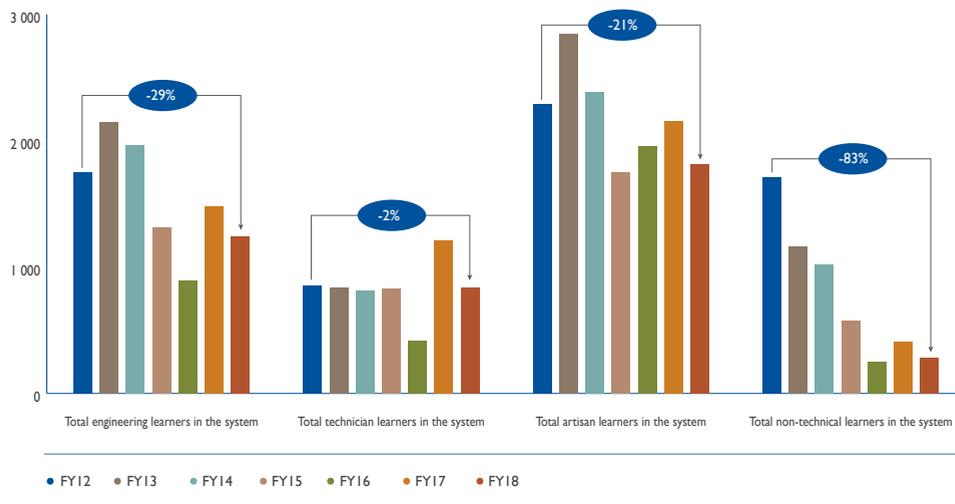
Learners currently enrolled in the system across all categories (technical and non-technical) decreased significantly between FY12 and FY18, a decrease of 29% for engineers and more than 83% for non-technical learners.

Eskom continues to make a strong overall contribution to training and skills development in South Africa. While its absolute contribution to learnerships per annum has decreased in recent years, its overall contribution to learnerships over the period from FY12 to FY18 should still be considered as significantly positive. Eskom’s training and skills development spend per employee remains the highest of its corporate peer group. Eskom invested in excess of R11.4 billion in training and skills development between FY12 and FY18.

60. Eskom Academy of Learning (EAL) is Eskom’s in-house training facility located in Midrand.

61. Excluding bursaries and scholarships, divided by total group permanent employees.

Total engineering, technician, artisan and non-technical learners in the system, number



Source: Eskom

Supplier monitoring and development

Eskom plays an important role in developing local suppliers both through the value of its procurement spend and specific initiatives to train and develop local suppliers. These initiatives also tie into South Africa's broader developmental and transformation agenda by raising up a new, more transformed industrial class.

In terms of procurement, in FY18 Eskom procured approximately R18.5 billion worth of local content through supply contracts for major projects such as Medupi, Kusile, Ingula, and power delivery projects. Furthermore, more than 11 000 individuals have been trained by suppliers over the lifetime of these major projects as a direct result of contractual obligations.

Eskom's CSI expenditure specifically allocates funds for the development of suppliers through its Enterprise Development initiatives. The Enterprise Development CSI budget increased to R34 million (FY18) from R16.1 million (FY12), with more than R240 million allocated over the period.

Some of the key CSI Enterprise Development initiatives driven between FY12 and FY18 include the business investment competition, small business expo, business incubators, and the Eskom Contractor Academy described in the case study on the next page. The approved budget for the Eskom Contractor Academy was reduced to R13.4 million in FY17 against R19 million in FY13; the number of beneficiaries decreased to 150 from 225 over the same period⁶².

Eskom continues to make strong contributions to supplier monitoring and development both through the local content and training provisions of its major projects, such as Medupi, Kusile, and Ingula. The CSI initiatives aimed at Enterprise Development also make positive contributions to supplier development, especially through initiatives such as the contractor academy where emerging contractors are trained to play an even larger role in Eskom procurement in the future.

62. In FY18, the approved budget for the Eskom Contractor Academy was R16 million, with the number of beneficiaries yet to be confirmed.



Case study: The Eskom Contractor Academy

The Eskom Contractor Academy runs an eight-month “Fundamental Business Management Programme” designed to equip emerging contractors (especially black women-owned and black youth-owned companies) with the skills they need to successfully start and grow a sustainable business. The project is aimed at entrepreneurs, often current subcontractors on Eskom projects, who wish to gain business management and other competencies required to become main contractors.

The program blends training and mentoring with practical experience, requiring students to attend one week of classes every month where a broad range of topics are covered in the modules are covered, including:

- Business sustainability and finance
- Safety, health and Aids in the workplace
- Project management
- People management
- Supply chain management
- Understanding the tender process

Since 2008, 1 311 students from all nine provinces have successfully graduated from the Eskom Contractor Academy - which boasts a 97% success rate. Of these Graduates, 41% have been women and 50% are youth. Upon graduation, students are awarded a certificate from the University of Limpopo.

Despite the recent slight decline in funding for the Eskom Contractor Academy, from R19 million in FY13 to R16 million budget in FY18, the success of the Academy to uplift South African entrepreneurs is clear. As of July 2018, over R3 billion worth of contracts have been awarded to graduates of the program since 2010.



Driving innovation

Eskom’s contribution to building know-how in South Africa extends also to driving innovation through its annual R&D spend through its research, testing, and development facility.

Among the initiatives that Eskom is pursuing in this regard include the support of black-owned businesses (specifically black youth owned and black women owned) in technical areas that are currently viewed as monopolised in the market. Eskom will take a minority share in the relevant business, which will be accompanied by an initial five-year supply contract to Eskom. This arrangement will support the relevant business and also provide Eskom with the required skills in key technical areas.

Eskom’s annual R&D budget decreased to R111 million (FY18) from R186 million (FY12). However, the outcomes of Eskom’s investments in this area have

remained relatively consistent. The outcomes of Eskom’s investments in R&D over the period are illustrated through the number of patents registered in FY18 of 19 – an increase from 17 (FY12). The number of patents registered by Eskom per annum was consistently at 19 per annum from FY15 onwards. Furthermore, Eskom contributed/supported a total of 11 research papers in FY18, equal to the FY12 level; 30 research papers were contributed in FY13 along with 17 patents⁶³.

While Eskom continues to make positive contributions to R&D, sustained decreases in funding for R&D may limit the outcomes related to innovation at Eskom in the future. Furthermore, given pressing issues such as renewable energy, water security, reliability of supply etc. which are relevant to Eskom, the question around whether more needs to be done from an R&D perspective remains.

63. Further details on, for example, Eskom’s investments in low carbon technologies and innovative partnership programmes it engages in had not been made available at the time of finalising this report, thereby limiting the scope of innovation that could be assessed.

Governance and leadership

Significant damage has been done to Eskom's corporate reputation over the last few years as allegations of corruption and mismanagement have been widely reported in the media.

This, in turn, has raised questions around leadership and governance within Eskom. We consider this crucial pillar by evaluating governance and ethics, legal contraventions and leadership indicators.

In addition, we detail the actions taken thus far in addressing both corruption and mismanagement as well as Eskom's future strategy in this regard.

Governance and ethics

Eskom received a qualified audit opinion in FY17 as external auditors could not rely on the processes in place to ensure the completeness of irregular expenditure reported. Following the implementation of improved governance processes, irregular expenditure⁶⁴ identified in FY18 increased to more than R13.3 billion from around R2.7 billion in FY17⁶⁵. Fruitless and wasteful expenditure of more than R534 million was identified in FY17 within Eskom company, with a further R56 million in FY18. Of concern is not only the high value of irregular as well as fruitless and wasteful expenditure identified over the period, but also the potential magnitude of such expenditure that may have gone undetected over previous years.

Concerns around the quality of Eskom's governance processes have also been evident from the view provided by the governance dimension of the 2017 RepTrak Pulse⁶⁶ survey conducted by the Reputation Institute. Eskom scored 25.8 (out of 100) on RepTrak's governance dimension, significantly lower than the SOC industry leader (51.5) and the SOC peer average (39.3). In terms of RepTrak's scaled international benchmarking methodology, any score below 40 is considered poor and in the lowest tier.

Eskom does have existing policies in place specifically relating to ethics, declaration of interest, anti-corruption and private work. In FY18, 6 140 individuals completed Eskom's code of ethics training, 28 975 individuals made a declaration of interest, 20 329 individuals completed Eskom's anti-corruption policy training and 998 individuals made private work applications⁶⁷. Eskom also has a fraud and corruption hotline, which encourages whistle-blowing, and is operated by an independent service provider. Eskom is currently investigating almost 250 cases reported through whistle-blowing channels.

Eskom has instituted a recovery plan aimed at recovering funds related to fraudulent or corrupt contracts. At FY18 year end, about 98% of 205 contracts over R1 billion and 91% of 6 998 contracts under R1 billion awarded over a period of three years had been reviewed. Eskom has also terminated or suspended contracts with suppliers shown to have a corrupt relationship with Eskom.

The 2018 Integrated Report highlights corporate governance and ethics as a key priority going forward. Significant improvements need to be made particularly in the areas of quality of information, governance structures, and ethics. In this regard, Eskom is implementing a five-point plan to transform governance, which has the following key elements:

1. Strengthening the internal ethics and fraud framework with a specific focus on consequence management.
2. Implementing independent lifestyle and conflict of interest audits on senior management and other levels, as deemed necessary.
3. Terminating of all irregular supplier contracts and work.
4. Enhancing the commercial governance process to ensure robust scrutiny, and strengthening the delegation of authority framework.
5. Instituting disciplinary charges and taking legal action, if required.

Legal contraventions

Eskom has been criticised in the past for not taking decisive action on allegations of misconduct relating to, in particular, senior executives. Eskom acknowledges the magnitude of these issues, and it is a key priority for Eskom to address them. Some significant actions have already been taken in the area of increasing the number of investigations undertaken by the Eskom forensic audit team and the suspension of senior executives. Even more can and should be done in the area of consequence management related to corruption, financial mismanagement and other serious misconduct.

Investigations conducted by Eskom's forensic audit team have increased significantly in the past financial year, particularly in the area of irregularities. A total of 237 investigations were conducted in FY18 compared to 175 in FY17. As a result, six criminal cases were referred to the police in the 2018 calendar year to date. Furthermore, seven Eskom senior managers including executives departed in FY18 following allegations related to corruption and misconduct.

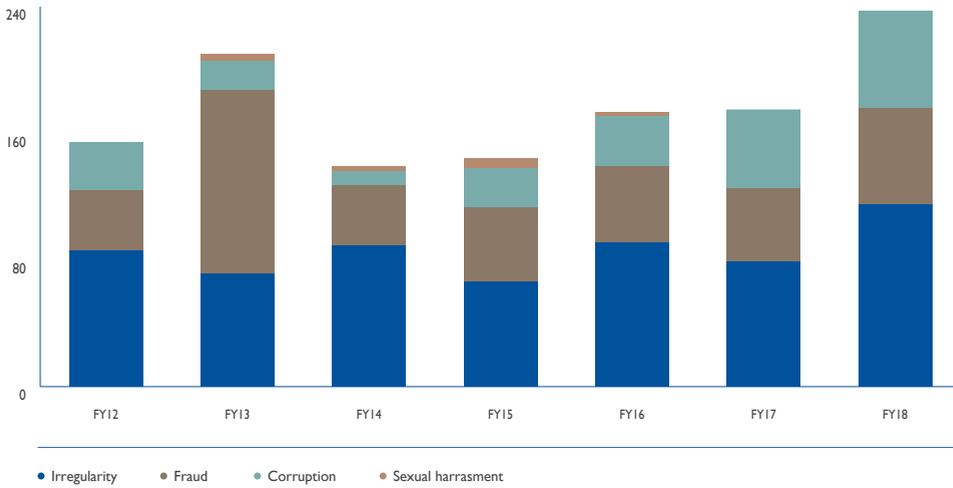
64. The PFMA defines irregular expenditure as "expenditure, other than unauthorised expenditure, incurred in contravention of or that is not in accordance with a requirement of any applicable legislation". This should be very clearly distinguished from fruitless and wasteful expenditure, which means "expenditure which was made in vain and would have been avoided had reasonable care been exercised".

65. Irregular expenditure identified for Eskom group in FY18 was R20.7 billion.

66. Reputation House, Eskom National Pulse, Deep Dive Report – Q1 2017.

67. Eskom does not specifically report the number of individuals that completed these trainings/declarations as a % of those required to do so. In some instances internal targets, such as training, are set on the basis of the number of training sessions held and not the number of individuals trained.

Number of investigations conducted by Eskom Forensic Audit



Source: Eskom Forensic Audit

While the increased number of investigations and recent senior management departures do signal Eskom’s intent to improve enforcement and consequence management for transgressions, this remains a key priority for Eskom. In the area of legal action, this speaks specifically to point five of Eskom’s action plan – instituting disciplinary charges and taking legal action when required.

From an environmental perspective, Eskom reported 30 environmental legal contraventions in FY18, which is down from the 50 contraventions reported in FY12.

Leadership

The leadership dimension of the 2017 RepTrak Pulse⁶⁸ survey provides a clear indication as to the concerns around the quality of leadership at the time. Eskom scored 26.7 (out of 100) on RepTrak’s leadership dimension, significantly lower than the SOC industry leader (50.2) and the SOC industry average of 38.2. In terms of RepTrak’s scaled international benchmarking methodology, any score below 40 is considered poor and in the lowest tier.

In September 2017, Parliament’s Public Enterprise Committee launched an investigation into state capture at SOCs, including Eskom. As part of a process to strengthen governance at Eskom, nine new board members were appointed in January 2018. The new board made it a key priority not only to improve overall corporate governance structures, but also to finalise

investigations into suspended executives. Seven senior managers (including executives) departed as a result of this process and action by the new Board.

In FY18 alone, there were three changes in interim CEO, a change in CFO and several other changes in the executive committee⁶⁹. These departures are the latest in a period of significant leadership instability. The frequent turnover of senior leadership in Eskom has undoubtedly added to the negative perception around governance and leadership at Eskom.

However, it should also be noted that Eskom’s own internal leadership evaluation scorecard showed an improvement to 3.84 (FY18) from 3.72 (FY13) over the period (out of a maximum of 5). Eskom’s leadership scorecard is based on a 360-degree leadership brand evaluation (LBE) focused on 12 leadership competencies⁷⁰. The overall improvement in score over the period also included improvement in the competency of “Leadership characterised by good governance”⁷¹. Eskom’s internal results could suggest that there remain some areas of good leadership within the company despite the clear challenges in top management over recent years.

Overall, it is clear that Eskom’s recent performance in the area of leadership, particularly in senior management, falls short of the standards it sets for itself.

68. Reputation House, Eskom National Pulse, Deep Dive Report – Q1 2017.

69. A total of four resignations, one temporary appointment, seven new appointments (including one re-appointment after suspension), and one change in portfolio.

70. The 360-degree LBE survey covers the performance of approximately 400 senior managers, general managers, and executives. Direct managers, peers, and direct reports are requested to evaluate these approximately 400 individuals on the basis of 34 questions covering 12 competencies.

71. LBE score for “Leadership characterised by good governance” improved to 3.9 (FY18) from 3.83 (FY13).

SUPPORTING THE NATIONAL DEVELOPMENT PLAN

While South Africa has consistently been amongst the largest economies on the continent, and a financial and business hub of Africa, it is still a country recovering from the injustices of the past and the resultant inequality.

Since the birth of South Africa's democracy more than 24 years ago, substantial progress has been made on numerous fronts. However, in 2015 there were almost 22 million⁷² people (40% of the population) living below the poverty line; in 2018 the unemployment rate is approximately 27%⁷³, and South Africans face a broad spectrum of significant development challenges, including a poor system of education and healthcare, housing and infrastructure gaps, and widespread corruption that has undermined the progress of the country.

The National Development Plan (NDP) was intended to present an action plan to address many of these issues. More specifically, the NDP is "a plan for the country to eliminate poverty and reduce inequality by 2030 through uniting South Africans, unleashing the energies of its citizens, growing an inclusive economy, building capabilities, enhancing the capability of the state and leaders working together to solve complex problems"⁷⁴. As a state-owned entity, Eskom has a role to play in the development and progress of South Africa that transcends the generation and distribution of electricity. It is with this in mind that Eskom's contribution to the South African development agenda has been assessed.

Eskom's impact on the development agenda has been assessed primarily against the objectives and targets as laid out in the NDP, as it is the most comprehensive

and widely referenced development strategy. As a secondary input, topic-specific plans, namely the National Infrastructure Plan and the Industrial Policy Action Plan, have been considered. Lastly, an international lens has been applied through the review of Eskom's performance against the UN Sustainable Development Goals (SDGs).

Given that the NDP was drafted several years ago and was based on economic growth projections that the country has fallen short of, both the original targets as well as actual country performance to date have been taken into account.

Eskom's commitment to supporting the development agenda of the South African government is clearly demonstrated through the numerous sub-pillars where performance has been positive. This includes employment, training and skills development; and contribution to local suppliers. However, several areas for improvement have been noted, specifically around governance and leadership, and greenhouse gas emissions.

Noting that not all sub-pillars have related development objectives and goals within the plans detailed above, the summary assessment of the relevant sub-pillars is presented on the next page, with a more detailed review of the sub-pillar performance thereafter.

72. Stats SA.

73. Stats SA.

74. National Development Plan, 2030.

SUPPORTING THE NATIONAL DEVELOPMENT PLAN continued

Pillar	Sub-pillar	Included in plans?	Sub-pillar score
Driving the economy	Contribution to GDP	✓	●
	Contribution to public finances		
	Employment	✓	●
Providing reliable, predictable and competitive electricity	Availability	✓	●
	Predictability	✓	●
	Pricing and competitiveness	✓	●
Reducing Eskom's impact on the environment	Water use	✓	●
	Greenhouse gas emissions	✓	●
	Air quality		
	End-user energy efficiency		
	Renewables	✓	●
	Biodiversity	✓	●
Contributing to transformation imperatives	Employment equity	✓	●
	Contribution to local suppliers	✓	●
Impacting on local communities	Investment in local communities	✓	●
	Externalities for local communities		
Being a good employer	Labour relations		
	Fatalities	✓	●
	Employee wellness	✓	●
	Employee value proposition		
Building internal and external know-how	Training and skills development	✓	●
	Supplier monitoring and development	✓	●
	Driving innovation	✓	●
Governance and leadership	Governance and ethics	✓	●
	Legal contraventions		
	Leadership	✓	●

Sub-pillar	Score	Key objective/target of plans	Eskom's contribution to plans
Driving the economy			
Contribution to GDP	●	Increase GDP by 2.7 times by 2030; 5.4% real growth over the period Increase public infrastructure spending to 10% of GDP	+ Revenue of R177 billion was generated in 2018, with nominal growth of 7.7% per annum between FY12 and FY18 +/- Through its operational and capital expenditure, Eskom contributed 3.1% of South African GDP in FY18, a decrease from the estimated 3.6% in FY12; the reduction is primarily the result of relatively lower capital expenditure +/- There has been a decline in capex spend of 3.4% per annum between FY12 and FY18; however, the absolute spend is still more than R47 billion in FY18 +/- Eskom has negatively impacted GDP through rotational loadshedding and the resultant loss of productivity over the period under review; however, as the main producer of electricity in South Africa, almost all production is in some way enabled through Eskom's electricity
Employment	●	Reduce unemployment to 6% by 2030 Create 11 million additional jobs by 2030, increasing the number of employed people to 24 million	+/- Eskom group provided employment to more than 48 628 ⁷⁵ people in FY18. Employment from the Eskom company complement and third party contractors over which it has direct control was estimated to be 124 000 in 2017, a decrease from the estimated 158 000 in 2011 + Eskom has consistently maintained a low employee turnover rate (4.6% in FY18) when compared to benchmarked South African corporate peers
Providing reliable, predictable, and competitive electricity			
Availability	●	Increase access to the electricity grid to 90% by 2030, with off-grid options available for the rest	+ According to Stats SA, 90% of South Africans have access to electricity in FY18 + Eskom implemented more than 215 000 electrification connections during the year
Predictability	●	Generate an additional 29GW of electricity by 2030, implying new build of more than 40GW given the capacity to be retired Provide a reliable and efficient energy service	+ An additional 7.6GW of capacity has been installed between FY12 and FY18 - Based on Eskom's new build programme, a total of 17.3GW ⁷⁶ of capacity is to be added between 2005 and 2023, and approximately 62% of this has been completed to date. If the programme delivers on track, after accounting for the additional 6.6GW planned, only 36% of the NDP required 40GW will be completed by 2023, making it unlikely that the 2030 target will be met; however, it is noted that new build is dictated by NERSA and the IRP, and not Eskom directly +/- SAIDI and SAIFI have improved since FY12; however, both metrics are still substantially higher than benchmarked international utility peers + Total system minutes lost for events <1 minute measured 2.09 in FY18, an improvement from 4.73 in FY12
Pricing and competitiveness	●	Expand access to energy at affordable tariffs	- The price of electricity has increased by 9.8% per annum between FY12 and FY18, which is above the average rate of inflation over the same period; however, it is noted that historically the electricity increases have been below inflation until the late 2000s + Eskom pricing (as opposed to the rate charged by municipalities) is still competitive when compared to benchmarked utility peers + 90% of South Africans have access to electricity in FY18; access to electricity has been expanded substantially since 1991 when only 34% of households were electrified
Reducing Eskom's impact on the environment			
Water use	●	Reduce water demand in urban areas by 15% below business as usual Reduce total volume of waste disposed to landfills Ensure compliance with environmental regulations	+ There has been a slight reduction in net water usage of 2.4% per annum between FY12 and FY18; however, this was during a period of decreased electricity production; water usage per GWh produced has also decreased very slightly by 0.5% per annum over the same period + The total Ash produced has decreased by 2.2% per annum between FY12 and FY18 + The proportion of Ash recycled increased by 5% per annum over this period from 6.4% to 8.6% in FY18 +/- Particulate matter amounted to approximately 57kt in FY18, and decreased by 3.9% per annum from FY12 to FY18; however, this is during a period of reduced production - Eskom reported 30 environmental legal contraventions in FY18

75. 40 572 permanent employees and 744 fixed-term contractors (FTCs) at an Eskom company level plus an additional 5 478 permanent employees and 1 834 FTCs at its subsidiaries.

76. Eskom Integrated Report, 2018.

SUPPORTING THE NATIONAL DEVELOPMENT PLAN continued

Sub-pillar	Score	Key objective/target of plans	Eskom's contribution to plans
Greenhouse gas emissions	●	<p>Reduce greenhouse gas emissions by 34% below current by 2020, and 42% by 2025⁷⁷</p> <p>Reduce carbon emissions from 0.9kg to 0.6kg/kWh through use of renewable sources</p>	<ul style="list-style-type: none"> + CO₂ emissions decreased by 2% per annum between FY12 and FY18 with reduced production, while CO₂ emissions per GWh produced also decreased slightly by 0.9% per annum over the period – Given that approximately 80%⁷⁸ of South African greenhouse gas emissions are generated by the energy sector, with electricity comprising 45%, Eskom's contribution to the required reduction is likely to fall short of the plan – Eskom's carbon emissions in FY18 amounted to 0.93kg/kWh⁷⁹ produced, substantially above the target – Overall, Eskom still emits a substantial amount of CO₂, and the highest CO₂ per GWh produced when compared to benchmarked international utility peers; however, the high proportion of coal in the Eskom energy mix is a large contributor to this
Renewables	●	<p>Increase contribution of renewable energy to electricity generation</p> <p>20GW of required 40GW new build should come from renewable sources</p> <p>Increase substantially the share of renewable energy in the global energy mix^[SDG]</p>	<ul style="list-style-type: none"> + In FY18, 3.9GW of renewables capacity exists, amounting to 7.6% of total nominal capacity (including IPPs) + Approximately 80% of IPP nominal capacity is comprised of renewable sources – The proportion of renewables within the Eskom energy mix is still low overall, and is far below the target of 20GW; however, as mentioned above, the new build and resultant energy mix are dictated by NERSA and the IRP and not Eskom directly, and Eskom does enable renewable capacity through IPPs
Biodiversity	●	<p>Reduce the degradation of natural habitats, halt the loss of biodiversity and, by 2020, protect and prevent the extinction of threatened species^[SDG]</p>	<ul style="list-style-type: none"> – On average, there are 200–300 known red data bird species fatalities per year, which does not account for mortalities of non-threatened species, or mortalities from collisions with lines + Eskom currently manages more than 17 000 hectares of land as a conservation area
Contributing to national transformation imperatives			
Employment equity	●	<p>Create employment equity by increasing the number of black people in management</p> <p>Achieving equitable representation across the workforce</p>	<ul style="list-style-type: none"> + 68% of Eskom senior management are black, while 38% are female; this is higher than most benchmarked South African corporate peers + 34% of Eskom's workforce is female, and 84% are black + Black representation in top management increased to 85% in FY18, and is the highest compared to the South African corporate peers benchmarked – 15% of top management in Eskom is female in FY18, which is below average for South African benchmarked peers
Contribution to local suppliers	●	<p>Promote redress through preferential procurement and investment in black owned/ managed enterprises</p>	<ul style="list-style-type: none"> + 60% of procurement is from B-BBEE compliant suppliers in FY18 + Procurement from black-owned entities in FY18 amounted to R53.5 billion + Procurement from black woman-owned entities in FY18 amounted to R19.7 billion
Impacting on local communities			
Investment in local communities	●	<p>Procure through local suppliers</p> <p>Eradicate backlogs to ensure schools have high-quality infrastructure by 2030</p> <p>Make early childhood development a top priority</p> <p>Improve public transport and systems, including rail and enhanced links with road-based services</p> <p>Provide access to an equal standard of health care regardless of income</p>	<ul style="list-style-type: none"> + Total Supplier Development and Localisation spend amounted to R18.5 billion in FY18; in addition Eskom has significant socio-economic development spend through new build projects and its different line divisions +/- Through the Eskom Foundation, Eskom has invested approximately R38 million in rural school infrastructure between FY16 and FY18, which has benefited more than 22 000 learners over the period. It is noted that this budget has been declining at 3.8% per annum over the same period; however, this is only a slight decline given the recent losses made by the company + During FY18, approximately R1.6 million was invested in Early Childhood Development through the Eskom Foundation + Eskom has invested R204.6 million in the building of roads and bridges at Medupi since 2007 + The Eskom Bophelong (Place of Life) mobile health clinic programme was initiated in FY12; through the Eskom Foundation, four mobile health clinics have been deployed to treat primary school children in rural areas around Eskom sites

77. Target extracted from South Africa's Copenhagen Pledge as referenced in the NDP.

78. NPC Economy Series on Energy, 2018.

79. CO₂ emissions per kWh of sales was 0.97kg/kWh.

Sub-pillar	Score	Key objective/target of plans	Eskom's contribution to plans
Being a good employer			
Employee wellness ⁸⁰	●	Significantly reduce the prevalence of non-communicable chronic diseases Prevent and control the burden of HIV/AIDS through education and treatment	<ul style="list-style-type: none"> + All Eskom employees have access to voluntary health assessments annually + Eskom has implemented a sports, recreation, and cultural programme which promotes the physical wellness of employees + The Employee Assistance Programme (EAP) offers counselling and other psychosocial preventive services. The EAP had a 12.6% utilisation rate in FY18, which is above the public-sector average of 10.7% + 87% of Eskom employees know their HIV status; while this is below the UNAIDS 90-90-90 target by 2020, it is not only very close to the target, but is also above that of benchmarked South African corporate peers, with two years to go
Fatalities	●	Reduce injury, accidents, and violence by 50% from 2010 levels Promote safe and secure working environments for all workers ^[SDG]	<ul style="list-style-type: none"> + Eskom's LTIR (excluding occupational diseases) has steadily declined by approximately 50% from 0.41 in FY12 to 0.20 in FY18, and is below the average LTIR of benchmarked South African corporates and international utility peers - Eskom unfortunately reported 15 fatalities in FY18. This number has increased from FY17, and is significantly higher than benchmarked South African corporates and international utility peers - Eskom also reported 26 public fatalities during FY18
Building internal and external know-how			
Training and skills development	●	Produce 30 000 artisans per year Provide 1 million learning opportunities through Community Education Increase university enrolment by 70% to 1.62 million Increase the number of students eligible to study towards mathematics- and science-based degrees to 450 000 by 2030	<ul style="list-style-type: none"> + Eskom currently has more than 1 800 artisans in training, which amounts to approximately 6% of the NDP target, despite employing less than 0.3%⁸¹ of the total South African workforce - The number of artisans in the system has been declining at 3.8% per annum since FY12 + The Eskom Foundation CSI in education amounted to more than R54 million since FY16, and has been growing at 6.1% per annum between FY16 and FY18. This investment includes tertiary education support and school support focussing on mathematics, science, and computer literacy + Eskom has invested more than R260 million in education grants in FY18, benefitting more than 4 500 learners and employees
Supplier monitoring and development	●	Strengthen local supplier development	<ul style="list-style-type: none"> + The Eskom Foundation has an approved budget of R34 million for enterprise development in FY18, with 317 beneficiaries + This budget has increased by 13.8% per annum between FY12 and FY18
Driving innovation	●	Expand science, technology, and innovation outputs by increasing R&D spend	<ul style="list-style-type: none"> + In FY18, the R&D investment by Eskom amounted to R111 million + Between FY12 and FY18, Eskom has registered 128 patents - Eskom's annual R&D budget decreased to R111 million in FY18 from R186 million in FY12
Governance and Leadership			
Governance and ethics	●	Forward a corruption-free society with high adherence to ethics Substantially reduce corruption and bribery in all their forms ^[SDG] Provide public service immersed in the development agenda but insulated from undue political interference Promote clear governance structures at SOCs	<ul style="list-style-type: none"> - Substantial accusations of corruption and misconduct have been laid against Eskom in recent years - Fruitless and wasteful expenditure of more than R547 million was identified in FY17 within the group, with a further R143 million in FY18 (R56 million for Eskom company in FY18) + Action has been taken against implicated individuals, with the departure of seven senior managers including executives, and two more still under suspension - Recent accusations of corruption and misconduct have been linked to political interference - Irregular expenditure⁸² of R19.6 billion was reported in FY18 within the group (R13.2 billion for Eskom company) highlighting the need for improved governance; however, it is noted that in many instances the issue was not a lack of governance and controls, but rather the management override of these controls, which speaks again to the ethics mentioned above + System and process improvements have been implemented to address shortcomings identified, and to monitor and report irregular expenditure
Leadership	●	Promote stable leadership at SOCs	<ul style="list-style-type: none"> - Eskom has had numerous CEOs over the past decade + A new Board of Directors was appointed in January 2018 with a clear mandate to stabilise and restore Eskom

80. The score for NDP contribution is green while overall heat map score is yellow; NDP does not account for Eskom's internal targets which have been missed.

81. Based on Labour force figures from The Economist Intelligence Unit, and unemployment rate per Stats SA.

82. Eskom Integrated Report, 2018; figure is only expenditure for year, excluding opening balance, condoned and derecognised amounts.

COMPARISON AGAINST GOALS SET BY THE 2011 ESKOM FACTOR REPORT

In the 2011 Eskom Factor Report, Eskom refers to eight strategic objectives which would contribute to improve Eskom's economic, social, and environmental footprint.

The eight objectives at the time were:

1. Becoming a high-performance organisation
2. Leading and partnering to keep the lights on
3. Reducing our carbon footprint and pursuing low-carbon growth opportunities
4. Securing our future resource requirements, mandate, and the required enabling environment
5. Ensuring our financial sustainability
6. Setting ourselves up for success
7. Implementing coal haulage and the road to rail migration plan
8. Pursuing private-sector participation

The table below is copied from the conclusion from the 2011 Eskom Factor Report and specifies the five areas of impact identified at the time as key improvement areas. It also includes an assessment as to what extent Eskom realised the improvement in those areas.

Area of improvement	Description	Performance assessment
Availability and reliability of supply	Eskom has been able to eliminate loadshedding since 2008. However, this was only possible through the contractual commitment of some of our largest customers to limit their electricity consumption during peak times and through the operation of expensive peaking power plants. Eskom is working hard to continue stable supply while increasing the total available volume of electricity to close the current supply gap of 6TWh, through tight operational controls and support further economic growth in South Africa.	<ul style="list-style-type: none"> • Availability of electricity in South Africa has greatly improved since 2011, with an electrification rate of roughly 90% • Reliability has improved since FY12, both in terms of frequency and duration of interruptions
Efficient use of electricity	While working towards increasing total electricity supply capacity in the coming years, Eskom is in the interim also working with residential, commercial and industrial customers to reduce the unnecessary use of electricity. This ultimately assists customers to address the effects of rising electricity prices.	<ul style="list-style-type: none"> • Eskom had a specific focus on demand management during previous periods of supply constraints • Both an increase in supply and lower-than-expected electricity demand growth (linked to lower economic growth) has reduced the need for these demand management measures • However, Eskom still recorded estimated demand savings of declined 40.2MW (FY18) relative to 365MW in FY12
Environmental footprint	Eskom acknowledges its current impact on the environment and is committed to implementing programmes which will reduce its relative environmental footprint per kWh of electricity generated.	<ul style="list-style-type: none"> • Eskom's absolute emissions declined; however, this was the result of lower output rather than significant improvements in the relative emissions per kWh of electricity generated. Eskom's resource use (mostly coal) has remained similar, and the mix of renewables by Eskom itself has not increased significantly
Electrification	Eskom is determined to further drive access to electricity for all citizens by carrying out government policy on electrification and providing the necessary infrastructure. It is Eskom's aim to support the target to achieve universal access. This will be achieved through the use of grid and off-grid technologies, and Eskom will encourage the participation of other service providers.	<ul style="list-style-type: none"> • Eskom has been instrumental in reaching the NDP's target of 90% electrification 12 years in advance of the deadline; moreover, Eskom is committed to driving further electrification thereby achieving universal access (an estimated 1 million households)
Health and safety	With Eskom's Zero Harm policy, the aim is to reduce the number of fatalities occurring as a result of either its operations or its product to zero by continuing safety trainings and reducing the exposure of employees to potentially harmful situations.	<ul style="list-style-type: none"> • Eskom has reduced fatalities occurring, both internally and externally; however, it still has a long way to reach absolute Zero Harm

CONCLUSION

Eskom has identified five key strategic objectives to guide its focus areas and associated actions.

These can be briefly summarised as follows:

1. Ensuring a financially viable and sustainable Eskom;
2. Providing reliable, affordable, and predictable electricity;
3. Making a transformative socio-economic contribution;
4. Being environmentally responsible; and
5. Providing focused research and development.

In line with these strategic objectives, the Eskom Factor 2.0 Report was developed to provide a balanced view of Eskom's socio-economic and environmental contribution, including areas where Eskom has improved or regressed since the 2011 Eskom Factor Report. Eskom's contributions were presented along eight key pillars and assessed as positive, negative, or a mix of positive and negative. The 2018 Eskom Factor Report identified not only key areas aligned to Eskom's overall strategic objectives where it had made significant positive impacts, but also areas where it could improve in the future.

Key positive contributions

Eskom's most positive impacts were on GDP contribution, employment, employment equity, and availability of electricity. These are mostly aligned to Eskom's strategic objectives of providing reliable, affordable, and predictable electricity and making a transformative socio-economic contribution. Eskom is estimated to contribute around 3.1% directly to South Africa's GDP and supports employment for more than 124 000 people in South Africa as a result of its employee complement and the third party contractors it has direct control over. Eskom is also committed to making electricity available to all South Africans, having electrified approximately five million homes since 1991, resulting in an electrification rate of 90% (34% in 1991). Through this, Eskom has been a major contributor towards achieving the NDP electrification target 12 years ahead of schedule.

Eskom has also made significant strides in terms of employment equity. In FY18, 85% of all Eskom employees were black, 34% were female, and 29% were black female; 3% of all employees had disabilities. Eskom was ranked second highest among the South African corporate peer group for both black and female representation in the combined top and senior management category. However, one area for potential improvement is female and black female representation in top management, where representation decreased between FY12 and FY18.

Key areas for improvement

There are also key areas of improvement for Eskom, most notably on the contribution to public finances, greenhouse gas emissions and air quality, as well as governance and leadership. These areas of improvement are aligned to Eskom's strategic objectives of ensuring a financially viable, sustainable and environmentally responsible Eskom.

Eskom has placed increasing strain on public finances, most notably through its increasing debt burden; equity injections required from government; and its decreasing contribution to total taxes. Eskom identified a clear action plan in its 2018 Integrated Report to address both lack of profitability and the increasing debt burden. However, even with a clear plan of action, there remains significant work to be done if Eskom is to move to a position where it contributes positively to public finances.

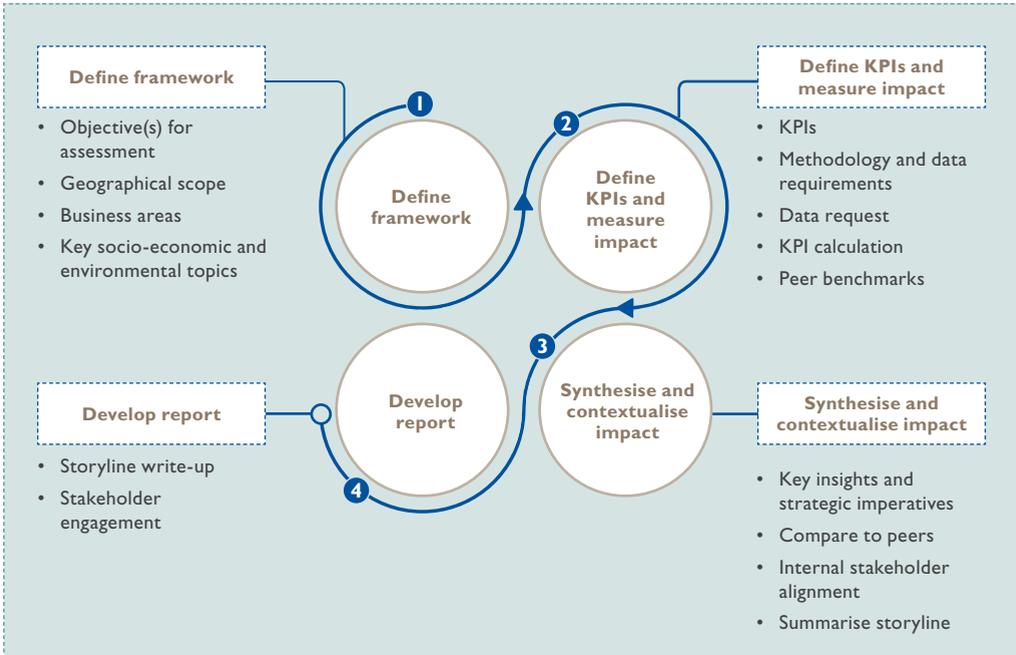
Another area for improvement is Eskom's impact on the environment. Eskom is highly dependent on coal for electricity generation, resulting in a significant environmental footprint. Benchmarking Eskom's carbon footprint against a set of utility peers suggests it has the highest emissions per kWh of energy produced (0.93kg/kWh against an average of 0.59kg/kWh), largely due to the energy mix. Eskom's energy mix is determined through the IRP and so long as coal remains an important part of the energy mix, this will coincide with comparatively high CO₂ emissions relative to its peers. Eskom is also responsible for the emission of SO_x, NO_x and particulates impairing the environment at a more local and regional level. Similar to greenhouse gas emissions, the absolute amount of SO_x, NO_x and particulates emitted declined between FY12 and FY18, primarily due to lower energy output. Even with constraints related to the use of coal in its energy mix, Eskom is determined to reduce its impact on the environment. To this end, Eskom has implemented a multi-phase plan to retrofit active power station units with a variety of emissions-reducing technologies, such as low NO_x burners. These are also being built into the newer units at Medupi and Kusile.

Governance and leadership is arguably the most important area for required improvement over the next couple of years. Significant damage has been done to Eskom's corporate reputation over the last two years as details surrounding the extent of corruption and mismanagement within the company have come to light. Improving governance and ethics is a key priority for Eskom, and initial steps have been taken to address this important issue. Eskom has instituted a recovery plan aimed at recovering funds related to irregular, fraudulent, or corrupt contracts. Investigations conducted by Eskom's forensic audit team have increased significantly in the past financial year, particularly in the area of irregularities. A total of 237 investigations were conducted in FY18 compared to 175 in FY17. As a result, six criminal cases were referred to the police in the 2018 calendar year to date. Furthermore, seven Eskom executives departed in FY18 following allegations related to corruption and misconduct. However, significant improvements still need to be made particularly in the areas of quality of information, governance structures, and ethics. In this regard, Eskom is implementing a five-point plan to transform governance, and is resolute about improving this area of the business in the future.

APPENDIX

Eskom Factor methodology

The Eskom Factor 2.0 methodology was developed based on the WBCSD sustainability impact factor and tailored specifically to Eskom's context.



The four-step framework adopted for the Eskom Factor 2.0 is laid out below:

1. Define framework

The first step in the approach is to set the scope of the overall assessment. This includes defining the geographical scope as well as identifying which business units to include.

For the Eskom Factor 2.0, the geographic scope was limited to Eskom's South African operations. In terms of business units, we focused on the direct operations of Eskom hence excluding other subsidiaries.

2. Define KPIs and measure impact

The second step consists of identifying and measuring, where possible, the direct and indirect impacts arising from Eskom's activities and mapping out what impacts are within the control of the company and what it can influence through its business. A total of over 200 indicators were considered for in the report. These data indicators were based on internally collected and reported information.

For the Eskom Factor 2.0, all of the indicators collected were aggregated into eight pillars of influence which highlight the key areas in which Eskom impacts on South Africa. Each pillar is comprised of multiple sub-pillars, representing different aspects of the pillars which were evaluated in detail.

3. Synthesise and contextualise impact

After the data has been collected and measured, the third step is to assess the contribution to development. Each sub-pillar, represented by one or more indicators, is assessed to determine whether Eskom's contribution is positive, negative, or a mix of positive and negative. As a starting point, we used the stakeholder perception for each sub-pillar. We then tested each sub-pillar from three different perspectives to obtain an unbiased view of Eskom's true performance on that sub-pillar (i.e. test accuracy of stakeholder views against reality).

The three different perspectives considered in assessing each sub-pillar:

- Eskom internal data trends from FY12 to FY18.
- Benchmark for Eskom and leading South African companies and global utility companies.
- Contribution to development policies and targets for South Africa and provinces as outlined in the National Development Plan and other policy papers.

Additional context was developed by examining some of the details behind the current performance within each impact area, including mitigating factors, planned improvement, priority areas for development, etc.

Taking all these perspectives into account, a rating of positive, negative, or a mix of positive and negative is attached to each indicator. The assessment of each sub-pillar is made by combining the various indicators within them, based on the significance of each indicator's impact from a socio-economic and environmental context. This, in turn, developed the assessment for each pillar overall.

4. Develop report

Finally, Eskom is not only seeking insight into its impacts, but is also looking to convert this knowledge into actions that ensure continual improvement. By identifying key areas for action and evaluating different possible interventions, one can arrive at a feasible plan to continually improve Eskom's impact.

Under the leadership of Eskom's newly appointed Group Chief Executive, a strategy is being undertaken in support of Eskom's mandate of being South Africa's trusted and reliable electricity provider. Eskom plans to develop a new ambition for the period to 2035, focused on implementation and disciplined execution of actions to ensure the sustainability of the company. This review is expected to be completed before the end of calendar year 2018. The main areas of focus are:

- Strengthening Eskom's financial position and its balance sheet.
- Reviewing the business model, which could lead to restructuring if warranted to respond to global changes in the energy industry.
- Growing the business in existing markets, expanding into new markets, and delivering new products across these markets.

Benchmarking methodology

In assessing Eskom's impact across the eight pillars, an important input is the company's performance against a relevant peer group.

Two different peer groups were selected for the purposes of the Eskom Factor 2.0 Report. Electricity peers in several regions across the globe were used as a benchmark to compare industry-specific factors, specifically environmental impact. Large South African corporates across diverse industries comprised the other peer group, allowing for South African-specific comparability and accounting for local regulatory and licence-to-operate requirements.

The peer group was primarily selected from the entities included within the Thomson Reuters environmental, social and governance (ESG) database, as this allowed for an assessment of the sustainability performance of entities as well as the availability of data. Thereafter, peer groups were augmented with additional companies where relevant.

The following filters were applied to assemble the international utility peer group of 10 entities:

Entity size: Entities filtered based on revenue and number of employees to prioritise large intentional utilities.

Sustainability performance: Sustainability laggards excluded by applying an ESG cut-off score of 50 on scale of 0 to 100.

Energy mix: Operations of peer group aligned through inclusion of utilities which use a large proportion (more than 40%) of fossil fuels (specifically coal and gas).

Region: Utilities within emerging economics supplemented with those from developed countries for diverse geographical spread.

In addition to the above, for the purpose of benchmarking predictability metrics SAIDI and SAIFI, a further peer group of utilities from developing nations (including Brazil, Argentina, Kenya, Russia and Philippines) was selected.

The following filters were applied to assemble the South African corporate peer group of 10 entities:

1. *Entity size*: Entities filtered based on revenue and number of employees to prioritise large South African companies.
2. *Sustainability performance*: Sustainability laggards excluded by applying an ESG cut-off score of 50 on scale of 0 to 100.
3. *Industry mix*: Diverse collection of industries incorporated, from financial and telecoms to industrials.
4. *State-owned companies*: Peer group augmented with other SOCs to align operating environment, regulatory requirements etc.

For selected KPIs, Eskom's performance was then compared to one or both of the peer groups, as appropriate. The information for each of the peers was obtained from company integrated reports, annual reports, and sustainability reports. In some instances, the KPI measured was not reported by all the companies within the peer group. In these instances, Eskom's performance was benchmarked against peers only if there were a minimum of three comparisons.

GDP contribution and employment methodology⁸³

The work undertaken by Quantec was aimed at estimating the economic impact of Eskom on the South African economy as well as the economic multiplier effects. The following provides a brief description of the methodology employed and data sources used in the analysis.

The project commenced with the collection of financial and labour statistics for Eskom from publicly available data-sources and annual reports, as well as research by Quantec Research on the structure of the broader electricity industry and findings from similar research projects (e.g. multiplier studies) around the globe.

The results from the research undertaken by Quantec derive mainly desktop research of and imputation from the following data sources:

- Published data and reports from official sources, such as Stats SA, the National Treasury, the South African Reserve Bank and the Department of Trade and Industry;
- Public documents, supplying information on the company's key financial statistics, electricity generation and distribution, tax contribution, operational expenditure, exports and imports, and employment and labour remuneration numbers for the 2017 calendar year;
- Information published on Eskom's website, as well as that of the National Energy Regulator of South Africa (NERSA); and
- Quantec's input-output tables for the South African national economy (used to determine the national impact).

Estimating the company footprints

This macro-economic impact assessment is based on a detailed input-output analysis and comprehensive supply and use tables (SUT)-based multiplier model for the South African economy. Input-output analysis is an accounting framework that provides a snapshot of the economy at a specific point in time, describing the composition and level of economic activity and the interactions and dependencies (backward and forward linkages) between industries and institutions.

The SUT offers a complete model of the economy, focusing on relationships among production activities (industries), labour, households, and the public sector. The SUT also offers insight into the total impact on employment and income and the distribution among different skills and population groups.

SUT multiplier models are, therefore, well-suited for modelling the intricate linkages of industries and measuring the economy-wide effects of a specific sector. These models are often used for economic impact analysis, where the economic implications of a potential action (e.g. a large infrastructure investment) or new policy or regulation can be evaluated prior to taking that action. The SUT model traces these impacts and provides estimates of total economy-wide impact on GDP, labour remuneration, gross operating surplus, taxes, employment, capital formation, and capital stock requirements.

The SUT analysis begins with an initial injection of demand into the economy (direct impact) and estimates the total (economy-wide) impact in the following sequence:

- The *initial economic impact* (injection) is the result of operational and capital expenditures by the company and represents Eskom's own employment numbers, capital expenditure and tax contributions.
- The *first-round effects* consider the impact of ongoing spending on and by direct suppliers to the electricity generation and distribution industries (e.g. production, employment and tax revenue stimulated at first-round suppliers).
- The sum total of the initial injection (e.g. the total production/turnover of the company, the intermediate goods bought, the salaries and wages paid and the profits generated by the company) and the impact on its first-round suppliers constitute the **direct impact**.
- The *indirect impact* (also referred to as the "rest of indirect" or ROI) measures the contribution of direct suppliers who purchase goods and services from their suppliers, who in turn remunerate their employees and pay taxes.
- The supplying sectors and their employees and households re-spend in the economy, generating further economic activity. This is known as the *induced impact*.
- The *total economy-wide impact* is the sum total of the direct, indirect and induced impacts.

83. GDP contribution and employment estimates calculated by Quantec, an independent economics consultancy.

Multiplier analysis

Quantec produces SUTs for South Africa at a national, provincial and municipal level in time series format covering 1995 to the most recent year. These tables are then used to calculate a comprehensive set of multipliers using standard Leontief multiplier methodology. The multipliers have various uses including impact analysis where they are used to, for example, estimate the impact of a large capital project on the economy. This document explains how Quantec's SUT multipliers are compiled, the type of multipliers produced, and provide brief instructions on how they should be used towards impact analysis. There is another document that details how Quantec's SUT tables are compiled.

Methodology used to calculate the multipliers

The structure of the Quantec SUTs including mathematical notation

	Industries	Final demand	Total supply at purchase prices	Other primary inputs	Total output at basic prices
Commodities	Z Intermediate use	Y Household consumption Government consumption Gross fixed capital formation Exports Change in inventories Residual	Total supply at purchase prices	M Imports CIF/FOB adjustment Trade margins Transport margins Taxes on products Less subsidies on products	X
Primary inputs	M Compensation of employees Gross operating surplus Taxes on production Less subsidies on production				
Total output at basic prices	X				

Wassily Leontief (1905-1999) developed the input-output multiplier modelling approach for which he received a Nobel Memorial Prize in 1973. The input-output model depicts economic relationships between different agents in an economy by identifying monetary flows (expenditures and receipts) between these. Multiplier models normally focus on inter-industry relationships at a detailed sectoral level, whereas the macro-econometric model emphasises relationships between macro-economic aggregates as depicted in the national accounts of a country.

The relationship between the initial spending and the total effects generated by the spending is known as the multiplier effect of the sector, or more generally as the impact of the sector on the economy. For this reason, the study of multipliers is also known as impact analysis.

The SUT contains 91 commodities and industries. The intermediate use block, for example, is therefore a 91×91 matrix, but to keep the discussion more general the number of industries and commodities in the SUT will be referred to as n. The following denotations are therefore made:

- n the number of industries and commodities.
- i denotes the commodities in the SUT.
- j denotes the industries in the SUT.
- X_i the total output of commodity i which is equivalent to the total output of industry j.
- Z_{ij} the inter-industry sales of commodity i to industry j.
- Y_i the total final demand of commodity i.
- M_j the total primary inputs used in industry j.
- a_{ij} the technical coefficient matrix which represents the ratio of input to output.
- B the Leontief or total requirements matrix.
- C the closed Leontief matrix.
- C* the commodity-industry portion of the closed Leontief matrix.
- V the output multiplier vectors.
- d share of additional multiplier to output (for example $\frac{GDP_i}{X_i}$).

APPENDIX continued

The inter-industry sales of commodity i to industry j are represented by the following block of equations:

$$\begin{aligned} X_1 &= Z_{11} + Z_{12} + \dots + Z_{1n} + Y_1 \\ X_2 &= Z_{21} + Z_{22} + \dots + Z_{2n} + Y_2 \dots \\ X_n &= Z_{n1} + Z_{n2} + \dots + Z_{nn} + Y_n \end{aligned} \tag{1}$$

The technical coefficient matrix may be calculated as follows:

$$a_{ij} = \frac{Z_{ij}}{X_i} \tag{2}$$

Substitution (2) into block (1) results in the following block of equations:

$$\begin{aligned} X_1 &= a_{11}X_1 + a_{12}X_2 + \dots + a_{1n}X_n + Y_1 \\ X_2 &= a_{21}X_1 + a_{22}X_2 + \dots + a_{2n}X_n + Y_2 \\ &\dots \\ X_n &= a_{n1}X_1 + a_{n2}X_2 + \dots + a_{nn}X_n + Y_n \end{aligned} \tag{3}$$

Block (3) can be rewritten in matrix notation as:

$$X = AX + Y \tag{4}$$

Solving for X:

$$Y = (I - A)^{-1} \cdot X \tag{5}$$

With the following matrices:

$$A = \begin{bmatrix} a_{11} & a_{12} \dots & a_{1n} \\ \vdots & \ddots & \vdots \\ a_{n1} & a_{n2} \dots & a_{nn} \end{bmatrix}$$

$$X = \begin{bmatrix} X_1 \\ \vdots \\ X_n \end{bmatrix}$$

$$Y = \begin{bmatrix} Y_1 \\ \vdots \\ Y_n \end{bmatrix}$$

$$I = \begin{bmatrix} 1 & 0 \dots & 0 \\ \vdots & 1 \dots & \vdots \\ 0 & 0 \dots & 1 \end{bmatrix} \text{ a (n x n) identity matrix}$$

- The matrix A is the technical coefficient matrix, but is also known as the direct requirements matrix and is used to measure the direct impact of changes in final demand on the economy. The direct impact measures the impact of the change in final demand (or the initial economic impact or injection) as well as the impact on the output of first-round suppliers.
- The Leontief matrix is $B = (I-A)^{-1}$ and measures the direct and indirect impact of changes in final demand (or the initial economic impact or injection) on the economy. This combines the direct impact as well as further rounds of impacts on all the suppliers.
- The direct and indirect impacts is measured using an “open” model, however, to measure the induced impacts the model is “closed” with respect to households. In doing this, the model measures the impact of all the earnings and subsequent spending by households on the economy, as well.
- The matrix C denotes the $(n+1) \times (n+1)$ matrix that endogenize household income and consumption. The C matrix is derived exactly in the same way A is derived, but an additional row and column is added that contains household consumption and expenditure shares as a ratio to total output. The B matrix is then used to calculate $(I-C)^{-1}$. However, for the rest of the calculations a sub-portion of this matrix is used C^* , that contains only the sector values calculated. This matrix is used to calculate the economy-wide impact which includes the direct, indirect, and induced impact of the sector.

These matrices are used to calculate the output multipliers, or vectors V^* ($n \times 1$) as follows:

$$\text{Initial impact (II):} \quad V_{II} = \begin{bmatrix} 1 \\ 1 \\ \vdots \\ 1 \end{bmatrix}$$

$$\text{Direct impact (DI):} \quad V_{DI} = \begin{bmatrix} \sum_{i=1}^n a_{i1} \\ \sum_{i=1}^n a_{i2} \\ \vdots \\ \sum_{i=1}^n a_{in} \end{bmatrix}$$

$$\text{Direct and indirect impact (D\&I):} \quad V_{D\&I} = \begin{bmatrix} \sum_{i=1}^n b_{i1} \\ \sum_{i=1}^n b_{i2} \\ \vdots \\ \sum_{i=1}^n b_{in} \end{bmatrix}$$

$$\text{Economy-wide impact (EW):} \quad V_{EW} = \begin{bmatrix} \sum_{i=1}^n c_{i1} \\ \sum_{i=1}^n c_{i2} \\ \vdots \\ \sum_{i=1}^n c_{in} \end{bmatrix}$$

These output multipliers may then be used to calculate other multipliers such as the GDP, employment, capital requirement or import multipliers. Let d denote the share of, for example, GDP to output, the GDP multipliers are then calculated as follows:

- GDP initial impact = d^*V_{II}
- GDP direct impact = d^*V_{DI}
- GDP direct and indirect impact (D&I) = $d^*V_{D\&I}$
- GDP economy-wide impact = d^*V_{EW}

Nomenclature

When reporting the results, a variation on the nomenclature mentioned above is used. This is done to avoid confusion between the technical multiplier terms and the general understanding of such terms. The initial impact V_{II} is described as the company’s direct impact. A distinction is then made between the direct suppliers and indirect suppliers, with the sum of these two terms and the initial impact forming the total value-chain impact of a company (given as the direct and indirect $V_{D\&I}$ above). The induced (or income) impact of household expenditure is taken as the difference between the economy-wide V_{EW} and $V_{D\&I}$.

Model limitations

Input-output analysis is an accounting framework that provides a snapshot of the economy at a specific point in time, describing the composition and level of economic activity and the interactions and dependencies (backward and forward linkages) between industries and institutions. There are however several limitations to the model which should be considered when interpreting the results. The following limitations of multiplier analysis exist and should be considered when interpreting the estimation results:

- Multipliers assume that resources are unemployed, and an increase in output would therefore not influence resource prices.
- The structure of the economy remains the same over time.
- An increase in the resource required (as indicated by the model) does not necessarily imply an absolute increase in the resources used. For example, an increase in employment (as indicated by the model) does not necessarily mean an increase in the same amount of jobs. It may mean that as the demand for labour increase some workers may work more hours, some workers in temporary jobs may be permanently employed, or that the number of shifts may increase. This especially prevalent in times of low economic activity. Therefore, it is more prudent to refer to the number of jobs supported because of the increase in economic activity and not necessarily jobs created.

The following assumptions were used in estimating Eskom's economic footprint:

General assumptions

- Financial information for the company and not the group was used.
- The impact is based on the company's South African footprint. The geographical footprint for Eskom was used to determine the South African impact on output, employment, and capital expenditure; for output and employment, the percentage of revenue for South African operations to total operations were used and for capital expenditure the percentage of non-current assets for South Africa to total non-current assets were used.
- FY2012 and FY2018 were converted to 2011 and 2017 calendar years as follows: FY2012 was converted by taking nine months of FY2012 and three months of FY2011. The same approach was used for FY2018.

Output and employment assumptions

- Value-added was calculated by taking EBITDA and adding back compensation of employees.
- Output was taken as revenue generated.
- Intermediate use is the difference between output and value added.
- Intermediate use split in intermediate imports, taxes on production, subsidies on production, product taxes was based on ratios in the broader electricity and gas sector.
- The employment figures for the company were used, but adjusted to South Africa based operations and to calendar years.

- Household income consists of labour remuneration plus social spending on communities (income transfer). Household income was adjusted from group to company and to South Africa based.
- Corporate taxes from income statement adjusted for South Africa.
- Personal taxes based on labour remuneration adjusted to South Africa and an average annual tax rate was applied (0.13 for 2011 and 0.15 for 2017).
- Information available in financial statements combined with historical sales (for 2011 and 2017) were used to determine the sales structure for Eskom.
- Information available in financial statements combined with historical intermediate use (for 2011 and 2017) were used to determine the intermediate use structure for Eskom.

Capital expenditure assumptions

- Capital expenditure figures were taken from financial statements (additions to property, plant and equipment plus software).
- The capital expenditure figures were adjusted for South Africa based on the non-current asset ratio. It is necessary to reclassify the capital expenditure by asset type, since capital expenditure on plants, for example, contains various asset types. The split was done using the historical ratios as given by 2011 and 2017 gross fixed capital formation by industry.

Table of abbreviations

Abbreviation	Definition
B-BBEE	Broad-based black economic empowerment
BMI	Body mass index
CCMA	Commission for Conciliation, Mediation and Arbitration
CO ₂	Carbon dioxide
CPI	Consumer price index
CSI	Corporate social investment
EVA	Economic value add
GDP	Gross domestic product
HDSA	Historically disadvantaged South Africans
HIV	Human immunodeficiency virus
IPP	Independent power producer
IRP	Integrated resource plan
kt	Kiloton = 1 000 tons
LTIR	Lost-time injury rate
Mt	Million tons
MYPD	Multi-year price determination
NDP	National Development Plan
NERSA	National Energy Regulator of South Africa
NO _x	Nitrogen oxide
NUM	National Union of Mineworkers
NUMSA	National Union of Metalworkers of South Africa
PFMA	Public Finance Management Act, 1999
QSE	Qualifying small enterprises
RCA	Regulatory clearing account
SAIDI	System average interruption frequency index
SAIFI	System average interruption duration index
SOC	State-owned company
SO _x	Sulphur oxide
UN	United Nations
VAT	Value-added tax

Data sources

- BCG analysis
- Eskom Factor Report 2011
- Eskom Integrated Reports 2012 to 2018
- Eskom internal data
- International Energy Agency
- International Transport Forum
- IRENA
- National Development Plan, 2030
- National Planning Commission of South Africa
- Quantec
- Stats SA
- The Economist Intelligence Unit
- Reputation Institute RepTrak Pulse survey
- Universum
- Various press publications – BusinessLIVE, BusinessTech, ESI-Africa, Mail and Guardian

We only have one world

Zero Harm
means taking care
of the environment
- it looks after you
every day.

**Be aware.
Take care.**

**Zero injuries. Zero fatalities.
Zero environmental incidents.**

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