Eskom

the Eskom factor

Contents

Chairman's Reflection

At Eskom, we are intensely aware of the challenges we face. Our challenges are often not unique to Eskom, they are national challenges facing all South Africans such as economic growth, job creation and transformation. Often, they are also international challenges such as climate change where collectively our individual actions impact on each other.

Many of these issues are also not new to Eskom, its employees or stakeholders. Eskom has been an economic enabler in South Africa for many years, we've been reducing our emissions and driving efficiency and we've been at the forefront of transformation. I'm proud to say that at Eskom we know that this is not enough and that we need to fundamentally shift the way in which we manage our business and, in doing so, fundamentally change South Africa's mindset regarding sustainability.

This is no easy task, but we have already seen a glimpse of what South Africa is capable of during the 49 million campaign which saw truly astounding results thanks to the individual efforts of ordinary South Africans.

The World Business Council for Sustainable Development has a vision for 2050, and we all need to get behind this vision and the action needs to start today.

Eskom will play a leading role in designing, guiding, measuring and enabling the change. We understand our responsibility to the South African people. As chairman, my own set of responsibilities are aligned with the Department of Public Enterprises and the country as a whole. Eskom fulfils many functions, but ultimately by becoming more sustainable it will enhance its ability to deliver on major issues such as driving economic growth, creating an environment for job creation and employ its own people, uplift local and rural communities in which it operates, manage and minimise the impact on the environment, advance the electrification of South Africa and become a catalyst for change in the country.

Measuring our impact and the findings and information in this report are a crucial component towards meeting these challenges. Sustainability is no longer something that will affect us one day, if we don't act soon. That time has come and we're the ones that need to make the change towards a better future and better quality of life for all.

Zola Tsotsi
Chairman

Commitment from the Chief Executive

To our stakeholders

Eskom's most important job is to provide an uninterrupted supply of electricity to support economic growth, and to improve the quality of life of the people of South Africa. To do this we have to ensure that we are a good investment and a trusted, ethical and well-governed company, highly rated by all its stakeholders.

The past year has seen Eskom embark on a review of our entire strategy and we have begun to transform our performance using improved controls and greater organisational discipline. We have committed to being a high-performance organisation, we have returned the company to profitability and we have begun implementing our funding plan. At the same time we have avoided load shedding since April 2008 and keeping the lights on remains our core focus. Just as importantly, we have started to improve the transparency with which Eskom's impact on society, the economy and the environment is reported and managed.

The first *Eskom Factor* report achieves a number of important objectives by identifying the key impacts areas, creating understanding of these impacts, and accurately measuring them. In particular it provides us with critical direction for further improvement on our positive impacts and reduction of the negative ones.

Given our size and the scale of our economic, social and environmental footprint, we are shaping the development of South Africa through six key impact areas. These are:

- Economic Growth Engine
- Employer, job creator and skills developer
- Impact on local communities
- Environmental footprint
- Enabler of South African development through electricity provision
- Catalyst for change in South Africa.

Each of these areas are explored fully in the *Eskom Factor* and specific programmes have and will be put in place to maximise the positive impacts and manage or mitigate the negative impacts of each. In particular, we aim to focus on the availability and reliability of supply, our environmental footprint, accelerated electrification to reach 100% by 2020, and health and safety.

As an active member of the World Business Council for Sustainable Development (a CEO-led organisation of over 200 global CEOs) Eskom is required to become a leader in sustainability to guide South Africa towards a future that promises a better quality of life for all. Our imperatives relating to economic growth, affordability and security of supply need to be balanced with the impact on the environment, society and the economy.

The *Eskom Factor* is not a one-off publication, but the baseline from which to continue to build on our transparency and positive impact on South Africa society. My 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.

Sincerely

Brian Dames
Chief Executive

Executive summary

The Eskom factor is a collective term to explain Eskom's footprint in South Africa, which has been quantified through a comprehensive assessment of the company's economic, social and environmental impact on the country, both positive and negative, within the financial year April 2010 to March 2011. The assessment is based on the "Measuring Impact" methodology developed by the World Business Council for Sustainable Development (WBCSD), which has been applied here within Eskom's specific context as a vertically integrated state-owned utility operating in South Africa. Eskom has produced this report as a basis for stakeholder engagement and invites its stakeholders to participate further.

The Eskom factor project is a culmination of a series of qualitative and quantitative data sets, totalling some 150 indicators, which have been analysed to form the backbone of the Eskom factor report. The results of these indicators have been interpreted as six key areas of influence where Eskom's economic, social and environmental footprint helps to shape South Africa's development, as follows:

1. Economic growth engine: Eskom is a major driver of the South African economy. Through its sales of electricity, Eskom's economic value added at group level reached R42.1bn in the financial year 2011. An independent study undertaken by Quantec Research (Pty) Ltd found that Eskom's direct impact on the South African GDP as a result of its operational and capital expenditure is in the amount of 3%, taking into account only initial impacts and first-round effects in the economy. However, when considering economy-wide effects, this impact is estimated to be more than 7%. Moreover, Eskom's current capital expansion programme is one of the largest stimuli of the South African economy, with a total budget of R340bn between 2005 and 2018. Eskom is a key driver of the development of new industries in South Africa, both through its localisation programme and by providing electricity for the establishment of new businesses. In all its activities, Eskom emphasises the enabling of *all* South Africans to take part in the economic activity of the country and already awards over 50% of its total expenditures to Broad-Based Black Economic Empowerment (B-BBEE)-compliant suppliers. There is a negative impact on the economy in the absence of electricity supply, as was experienced in 2008. This also provides a good indication of the importance of the supply of electricity in maintaining economic activity. However, financing the construction of new electricity supply facilities also has a negative impact on the economy since requiring cost-reflective pricing will see large price increases scheduled for the next few years. This will, in turn, increase production costs for energy-intensive industrial sector and could reduce competitiveness in export markets.

2. Employer, job creator and capabilities developer: Eskom is one of the largest employers and buyers of goods and services in the country. In addition to the over 40 000 people Eskom employs directly, Eskom's suppliers employ an even larger number of people whose jobs are indirectly attributable to Eskom's activities. The assessment found that Eskom provides direct and indirect employment to over 129 000 people and, considering family members, sustains over 516 000 South Africans. Through its new-build programme, Eskom contributes to job diversification, creating jobs in manufacturing, construction, business services and other industries, beyond the traditional engineering and mining discipline. However, it is recognised that the price increases approved by the National Energy Regulator of South Africa's (NERSA's) decision in order to move towards a cost-reflective tariff, will have a negative impact on all users of electricity, but particularly industrial, commercial and residential customers. This may result in an estimated loss of around 16 000 jobs, mainly in energy-intensive industries as they cut back on production.

During the year, Eskom provided 298 000 training days, equivalent to seven days of training per employee. Furthermore, Eskom trains current and potential business partners and creates training opportunities at its major suppliers.

3. Impact on local communities: It is Eskom's objective to create as much local employment as possible in the construction of its new facilities and to provide local communities with the necessary training. 54% of the workers employed on site to build this new infrastructure are sourced from the same areas where construction is underway. This has an immediate positive impact on the local community and even when the employment is temporary, it increases the future employment opportunities for people who have acquired additional skills. In the process of construction, Eskom makes a significant contribution to local infrastructure through the development of road, rail, telecommunication, sewage and other infrastructure that is required to support a major project.

At the same time, these activities also cause disruption, place pressure on existing facilities and produce dust and noise during the construction period, which can last several years. At times, there has been a need to relocate people in the immediate surroundings of the construction sites to other areas. Eskom tries to minimise the negative impact of these moves and works closely together with the affected families and local community leaders to find solutions that will be acceptable to all involved.

There are also health and safety issues associated with construction. Eskom aims to eliminate injuries and fatalities both in the public, within Eskom, its suppliers and business partners through the implementation of activities included in the Zero Harm Policy.

4. Environmental footprint: In the process of generating electricity, Eskom is a significant user of South Africa's natural resources, in particular of fresh water and coal. Moreover, given its current power

generation mix, Eskom has a considerable CO_2 footprint and is a large emitter of sulphur dioxide and nitrogen oxides (SO_2 and NO_x) and particulates. During the 2011 financial year, the company used 327bn litres of fresh water and emitted some 230 Mt of CO_2. Eskom is committed to improving the efficiency of its current and future power plants to reduce these negative impacts for each unit of electricity generated in line with the country's Integrated Resource Plan.

5. Enabler of South African economic and social development through electricity provision: Eskom is supporting the government's objective of advancing electrification. Since the beginning of the electrification programme, Eskom has electrified over four million homes and plans to assist government to achieve universal access to all South Africans, improving lifestyles and providing opportunity to enter the economy. Moreover, through the building of new electricity generation and transmission capacity, the company will contribute significantly to improving power availability and reliability. A demand-supply gap had been forecasted for South Africa in the order of 6 TWh for the 2011 financial year. Load shedding in 2011 was avoided through tight operational controls. Through a progressive tariff scheme, charging more per unit of electricity as consumption rises, and the continued promotion of free basic electricity, Eskom seeks to neutralise the negative impact of electricity price increases for low-income/low-energy consumption customers. Finally, Eskom is committed to promoting energy efficiency initiatives such as the 49-million campaign, which aims to increase awareness of wastage and help customers reduce their electricity usage.

6. Catalyst for change in South Africa: Eskom leads by example and works as a catalyst for change in South Africa through carrying out its business in a responsible manner. Eskom's commitment to good corporate governance, evidenced by the most recent audit of Eskom's integrated report, contributes to anti-corruption practices. Eskom supports the realisation of the development goals set out by the government of South Africa, through effective participation in various national dialogues around national and international policy.

Eskom is fostering innovation through a number of external and in-house initiatives, particularly Research and Development (R&D), with a significant investment in the development and demonstration of new and better technologies. Eskom is a Level 2 B-BBEE contributor and invested R62m in Corporate Social Investment (CSI) initiatives during the 2011 financial year.

Looking forward . . .

Ultimately, Eskom wants to change gear to achieve higher performance to further increase its positive impact on South Africa while reducing the negative environmental burden. Eskom will continue to focus on the government's five-year priorities and actively contribute to the economic and social development of the country and its people.

Eskom presents this study as a basis for discussion and would like to delve further into its impact on the environment, society and economy. Your valuable contributions on this preliminary assessment of Eskom's footprint and any other potential areas of impact you feel are relevant, could be considered in future editions of the Eskom factor.

Acknowledgements

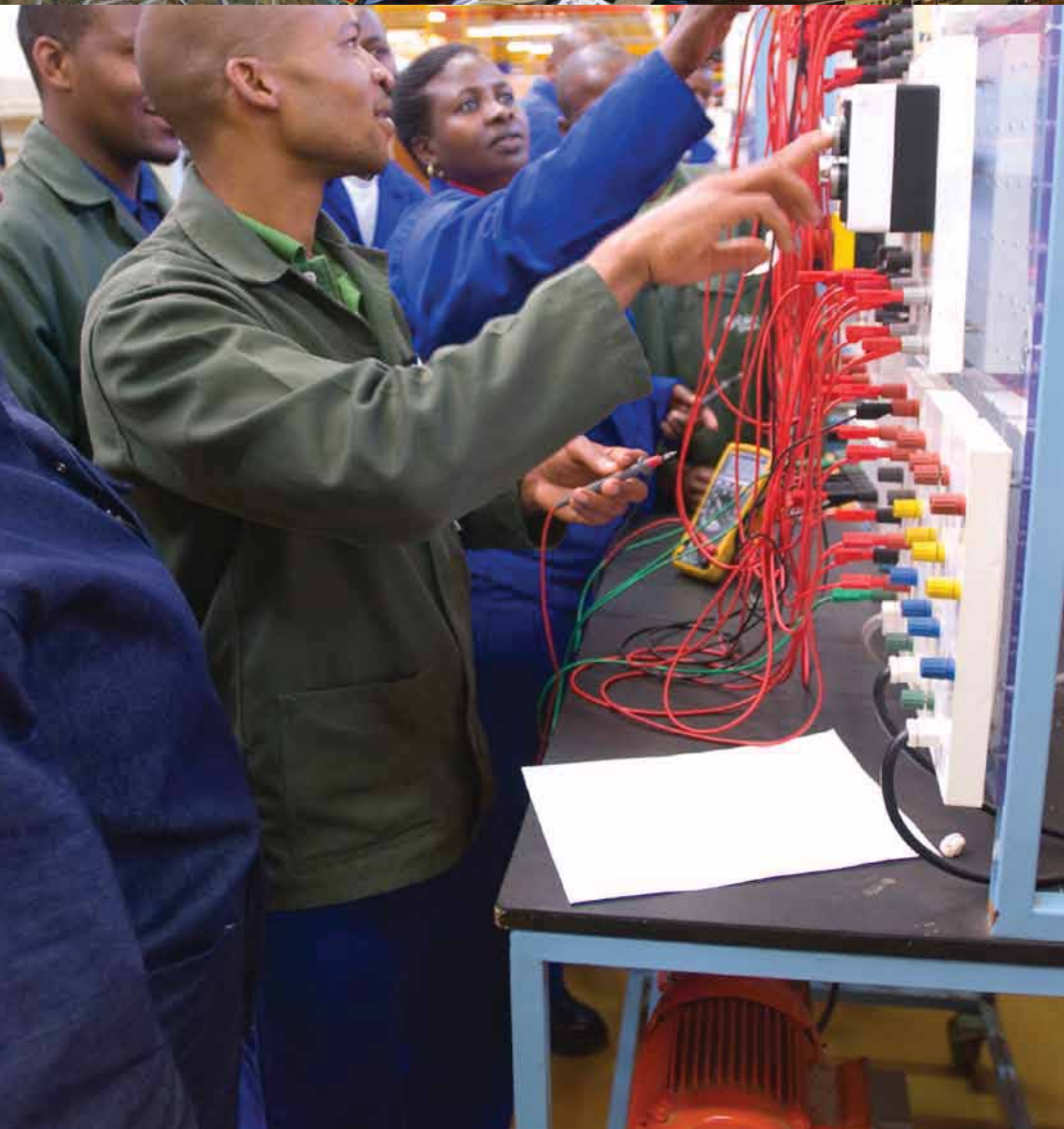
This report was commissioned by Eskom's senior management, led by the Chief Executive.

The execution of the project that led to the publication of this first Eskom factor report was conducted by a dedicated internal team of Eskom experts between February and June 2011, overseen by a steering committee including representatives from all relevant business units.

An international team from The Boston Consulting Group (BCG), including global experts from the BCG Global Sustainability team, provided external expertise and supported the assessment of Eskom's footprint and the publication of the Eskom factor report. BCG is a global management consulting firm and the world's leading advisor on business strategy.

The World Business Council for Sustainable Development (WBCSD), of which Eskom is an active member, sponsored the development of the Measuring Impact framework, which was applied in the assessments for the Eskom Factor report. The WBCSD is a CEO-led, global association of some 200 companies dealing exclusively with business and sustainable development.

We want to thank all involved for their tremendous efforts and are committed to continuing the initiative to increase transparency and understanding of Eskom's footprint in the future.



Introduction

"He who knows others is wise. He who knows himself is enlightened."

Lao Tzu, Chinese philosopher

Reason for this report and key objectives

Eskom's overall impact on South Africa is significant. Electricity has been a driver of our country's development over the past century and will continue to be a key enabler for economic growth and job creation.

As a state-owned company that impacts the lives of South Africans on a daily basis, Eskom has a great responsibility towards our society, our economy and our environment. Believing that transparency is important and by removing the veil to reveal Eskom's impacts and contributions, Eskom delivers on one important element of this responsibility.

The Eskom factor is intended to be a thorough assessment of Eskom's impact during the 2011 financial year on the economy, our society and the environment, not only in a direct sense but also through our immediate suppliers and business partners. By establishing a robust impact assessment framework, it is also Eskom's first step in addressing the World Business Council for Sustainable Development's (WBCSD's) Vision 2050 of "nine-billion people living well and within the limits of the planet".

To build on the insights gained through the assessment and further improve the level of detail, Eskom seeks to engage actively with our many stakeholders. The objective of publishing this information on the web is to create an opportunity for open dialogue on Eskom's footprint and to generate further insights on how to accelerate and further increase our positive impact on the country. Such a study could be revisited periodically in order to gain insight on how Eskom's footprint has changed and where new actions should be targeted. In this way, the results from the Eskom factor report can be used as input to its internal strategy review process. Depending on the stakeholder feedback received, Eskom will review the benefits of a future Eskom factor report.

The Eskom factor report does not replace regular compliance reporting such as the integrated annual report or any other form of regular Eskom publication. The integrated annual report details the company's performance against strategy and objectives. This Eskom factor report aims to comment on both the direct and indirect, economic, social and environmental impacts of Eskom and provides some judgement as to whether the type of impact is generally negative, generally positive or has both positive and negative attributes.

Introduction continued

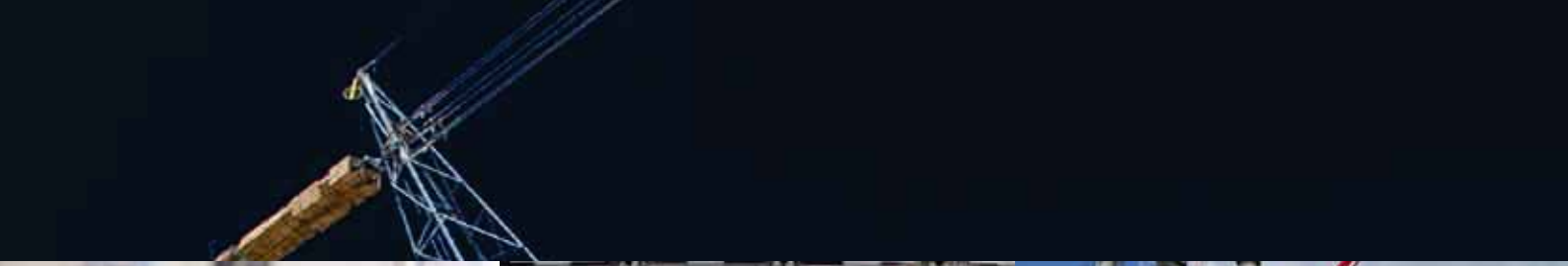
This Eskom factor initiative is Eskom's first assessment of its economic, social and environmental impact on South Africa. By developing this study through a robust methodology, it is believed that the result will set a platform for measuring future changes in impact and allow a pathway to continual improvement. The project makes a highly relevant contribution for Eskom and all stakeholders, in particular by:

- determining Eskom's economic, **social and environmental footprint** and highlighting the most relevant impacts on South Africa;
- continuing **open communication and engagement** with Eskom's stakeholders and creating a better understanding of the future perspectives;
- promoting a more informed decision-making process being mindful of Eskom's impact and **contributing to charting the course** for future strategy and initiatives; and
- promoting discussion around the **standards for economic, social and environmental footprint assessment** not only in South Africa, but globally.

Moreover, the Eskom factor initiative is a step towards meeting the goals of WBCSD's Vision 2050 – a vision that takes the world well on the way to sustainability by 2050. The rollout of a solid impact assessment framework allows Eskom to reflect where it stands with regard to sustainability and to align with the strategic process towards the WBCSD Vision 2050.

In this first edition of the Eskom factor report, Eskom's economic, social and environmental footprint during the 2011 financial year (which ended 31 March 2011) was analysed. In doing so, not only was Eskom's direct impact considered but, where possible, also included the effects of direct or first-tier supplier and business partner activities. In essence, the intention of the analysis and assessment is to include the entire Eskom conglomeration of activities. This conglomeration of all activities within the Eskom group and the communities within which Eskom operates (including its employees, suppliers and customers) will henceforth be referred to as Eskom's "cloud" of activities.

Some types of information are only expected to be available from Eskom's stakeholders themselves and it is intended to engage further with key stakeholders, in particular with corporate and residential customers, suppliers and business partners, employees and the unions representing them, independent interest groups, non-governmental organisations (NGOs), governmental bodies and of course the communities in which Eskom operates.



Setting the scene

"Eskom has been providing South Africa with the lifeblood of electricity since 1923."

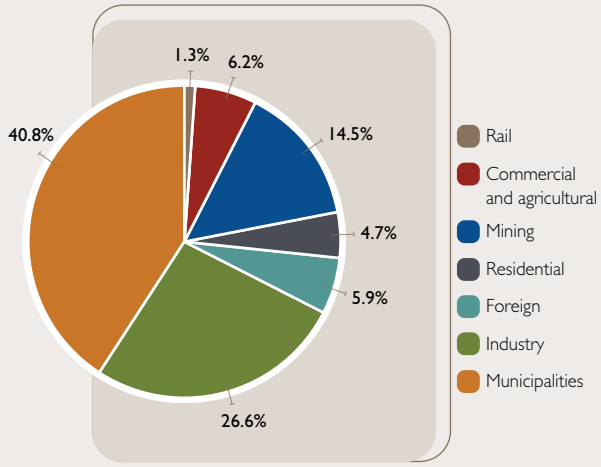
Setting The Scene

About us

Eskom Holding Ltd is a State-Owned Company (SOC) wholly owned by the South African Government. It is South Africa's, and indeed Africa's, largest electricity producer, generating approximately 95% of the electricity used in South Africa and approximately 45% of the electricity used in Africa. It is also one of the top 20 utilities in the world by generating capacity. Eskom is active in all elements of the electricity supply chain, generating, transmitting and distributing electricity to industrial, mining, commercial, agricultural, residential customers and redistributors. Eskom is regulated under licences granted by the National Energy Regulator of South Africa (NERSA) and receives revenue based on NERSA-approved set tariffs.

Eskom has a diversified customer base, as depicted below:

Figure 1: Eskom sales by customers



Role in South Africa

According to the compact Eskom has with its shareholder (the Department of Public Enterprises), Eskom's mandate is to provide electricity in an efficient and sustainable manner. Eskom is a critical and strategic contributor to the government's performance in providing the country's citizens with a secure supply of electricity. In pursuing its mandate, Eskom's purpose is to provide sustainable electricity solutions to grow the economy and improve the quality of life of the people in South Africa and the region.

Providing reliable and affordable electricity is not only a commercial undertaking – it underpins the livelihoods of South Africans. As a state-owned company and through the provision of electricity, Eskom plays a central role in the development of South Africa. Eskom's values (listed below) indicate its commitment to providing reliable and affordable electricity to the country and conducting its operations in a sustainable and ethical manner:

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

Countries in which operations are located

Eskom's head office is located in Johannesburg, and operations are spread throughout the country. In December 2008, a small office was opened in London in the United Kingdom, primarily to exercise quality control on equipment being manufactured in Europe for the capacity expansion programme. While Eskom operates primarily in South Africa, there are two subsidiaries that operate electricity generation concessions in Mali, Senegal, Mauritania and Uganda.

Setting The Scene continued

While the majority of Eskom's operations are focused in South Africa, it has active relationships with the other countries in the SADC region through its participation in the Southern African Power Pool (SAPP). As of now, Eskom supplies eight countries in the SADC region with electricity either on a regular or on-demand basis. Eskom also imports electricity generated in Mozambique. Although some of our neighbouring countries may rely on Eskom for as much as 50% to 90% of their electricity needs, these are relatively small compared with South African demand. Nevertheless, the impact in terms of a social, economic and environmental footprint in those countries is expected to be significant and has been identified as an area to be considered. In future, Eskom intends to deepen these relationships for mutual benefit, aspects of which are outlined in the Government's New Growth Path.

South Africa's developmental context

South Africa has experienced substantial growth in recent years and has become one of Africa's major economies. However, it is also facing a broad range of development issues. In October 2010, the government introduced its New Growth Path (NGP), outlining strategic and economic objectives for South Africa over the next decade. The government's five-year priorities include: improving education, promoting healthcare, creating decent work, fighting crime and corruption and fostering rural development and land reform.

We acknowledge that South Africa as well as Eskom faces additional developmental issues such as reliable supply of electricity and environmental degradation. This study therefore aims to identify and unpack these issues and provide an overview of how Eskom directly and indirectly impacts South Africa's development.

Eskom has a history of exceptional service to the development of South Africa. The establishment of The Electricity Supply Commission (Escom) was made effective from 1 March 1923. The Commission was made responsible for establishing and maintaining electricity supply undertakings on a regional basis, and electricity was to be supplied efficiently, cheaply and abundantly to government departments, railways and harbours, local authorities and industry.

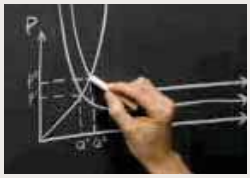
As an SOC that has been operating for almost nine decades, Eskom plays a substantial role in national and regional development, which goes beyond the basic supply of electricity.

Through the daily activities of providing electricity, building power plants and transmission infrastructure, connecting households without access to electricity or engaging in corporate social initiatives, Eskom has a significant impact on the lives of most people in the country, contributes to shaping the future of South Africa and the region and supports the government's priorities.

For more information on Eskom's key areas of contribution, please refer to the "Supporting government's five-year priorities" box.

Supporting government's five-year priorities

Improving education



Provide training and skills development for Eskom employees, learner's pipeline and with contractors.

More than 5 000 Eskom trainees / bursars in 2011

Promoting healthcare

Enhance employee health and wellness practices.

Roll out key HIV/AIDS initiatives.

26 000 employees voluntarily tested for HIV in 2011

Creating decent work

Provide numerous jobs (employed >12 months) both internally and at suppliers.

Contribution to job diversification through the new-build programme.

More than 129 000 people employed in Eskom cloud within South Africa in 2011

Fighting crime and corruption

Adhering to standards of accountability and transparency.

Proactive involvement by Eskom's Assurance & Forensic Department in major projects.

Contributing to SA leading position on anti-corruption performance

Fostering rural development & land reform

Supporting the government's objective of advancing electrification.

Electrify rural areas as part of the government's electrification programme.

More than 800 schools and clinics electrified in 2011

Note: Figures relate to financial years.

Source: Eskom BCG analysis.

Methodology

"The framework has been developed specifically to measure the corporation's impact in developing economies."

Framework for determining the Eskom Factor

The framework used to determine the Eskom factor is based on the "Measuring Impact" methodology developed by the World Business Council for Sustainable Development. This methodology is used by other major global companies.

The framework was applied to define Eskom's economic, social and environmental impact along the three key stages of our key activities:

- Build: The construction of new power plants
- Operate: The generation, transmission, distribution and retailing of electricity
- End Usage: The usage of electricity by our customers for lighting, heating, cooling, mechanical and chemical energy.

Furthermore, the impact of supporting activities was also included. These cover, for example, governance, human resources, marketing and communications, research and development and procurement practices.

The assessments were carried out through a structured four-step approach that includes:

- Setting the boundaries of the assessment
- Measuring the impact
- Developing understanding
- Planning for action.

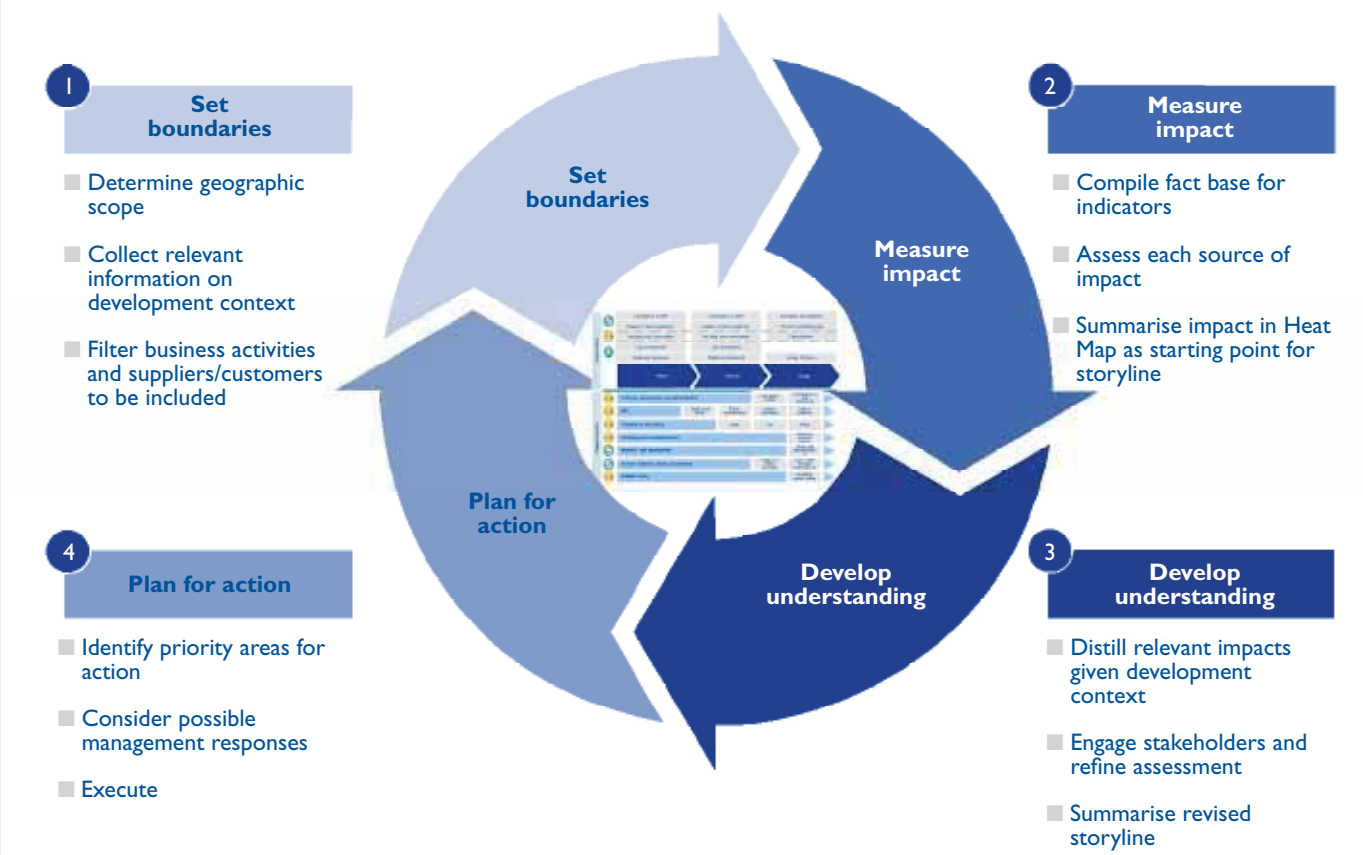
The Eskom factor was determined using an internationally developed methodology, the Measuring Impact Framework developed by the World Business Council for Sustainable Development (WBCSD), an organisation uniting 200 major global corporations around the topics of business and sustainability. The premise of the Measuring Impact Framework is to enable business to measure and assess their contribution to economic and broader development goals in the societies where they operate and use this understanding to inform their operational and long-term investment decisions and have better-informed conversations with stakeholders. The framework therefore takes into account all dimensions of a company's footprint, from an economic, social and environmental perspective. This framework has been tried and tested by companies, including Vodafone, Nestlé and Unilever to measure their footprint or "factor" in developing economies.

Eskom applied the WBCSD framework to determine our footprint in South Africa and to link our impact to the developmental context of this country to focus this report on key areas of interest.

Methodology continued

The Measuring Impact Framework consists of the four steps depicted in the following diagram:

Figure 2: Overview of the Measuring Impact Framework



Source: WBCSD, BCG analysis.

1. Setting the boundaries of the assessment

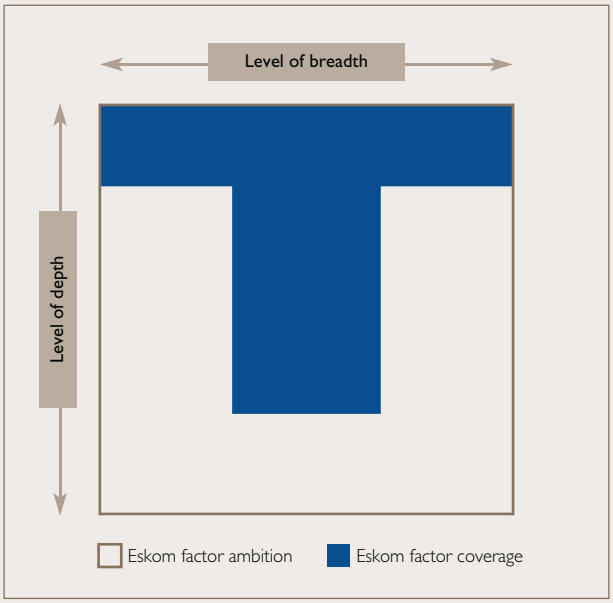
This step includes determining the geographical regions and activities of the business for inclusion in the assessment, as well as understanding the broader development goals and circumstances of the selected geographies.

For this first assessment, Eskom set the boundary as its South African operations. In order to assess the full impact of Eskom's activities, the sources of impacts have been extended to include the activities of Eskom's suppliers and, to some extent, those of the employees and key customers, insofar as they are attributable to Eskom's business context, and the information is readily available. The Eskom factor therefore covers an extended impact area termed "the Eskom cloud" for purposes of this report.

In order to set realistic goals for the initial factor report, a balance needed to be created between available time to complete the study and an ambition to be comprehensive and complete in the assessment. The scope of this study, as illustrated in the adjacent graphic therefore provides a broad overview of Eskom's entire footprint in South Africa, identification and description of the Eskom key sources of impact and an in-depth review of the impacts of the new-build projects. Eskom plans to expand the "T" in future iterations of the report to include in-depth study of the impacts of other areas of operations.

Direct impacts can combine to have a knock-on or indirect economic, environmental and/or societal effect. An Eskom factor impact tree, such as that shown in figure 4, has been created.

Figure 3: Schematic representation of data coverage



2. Measuring the impact

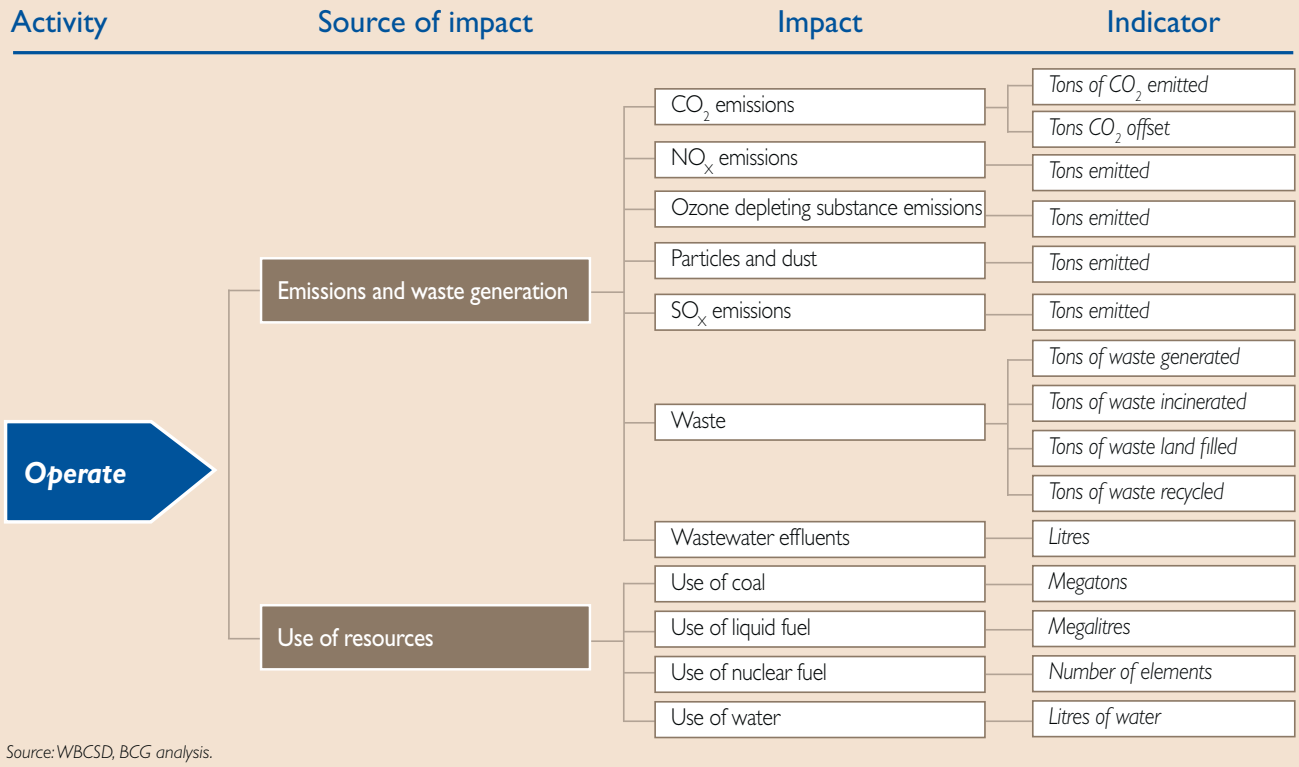
This step consists of identifying and measuring, where possible, the direct and indirect impacts arising from the company's activities and mapping out what impacts are within the control of the company and what it can influence through its business.

Compilation of the fact base

The Eskom Factor Impact Tree gives an overview of the Eskom factor methodology. The map provides a snapshot to explain the terminology. The complete tree is derived from an extensive analysis and is based on internal and external data sources.

An activity gives rise to the first level of impact. These key sources or drivers of impact – for instance the use of resources – further branch out into more specific areas of indirect impacts, i.e. water usage, use of land, etc. At the next level, the methodology includes concrete measurable indicators for each impact. In this example, litres of water used and square metres of the different types of land employed would be quantified. Based on these numbers, it is possible to then judge whether the overall impact is positive or negative, as depicted in the Eskom Factor Impact Tree as shown below. The same process is followed for each first-level impact.

Figure 4: Eskom Factor Impact Tree



Source: WBCSD, BCG analysis.

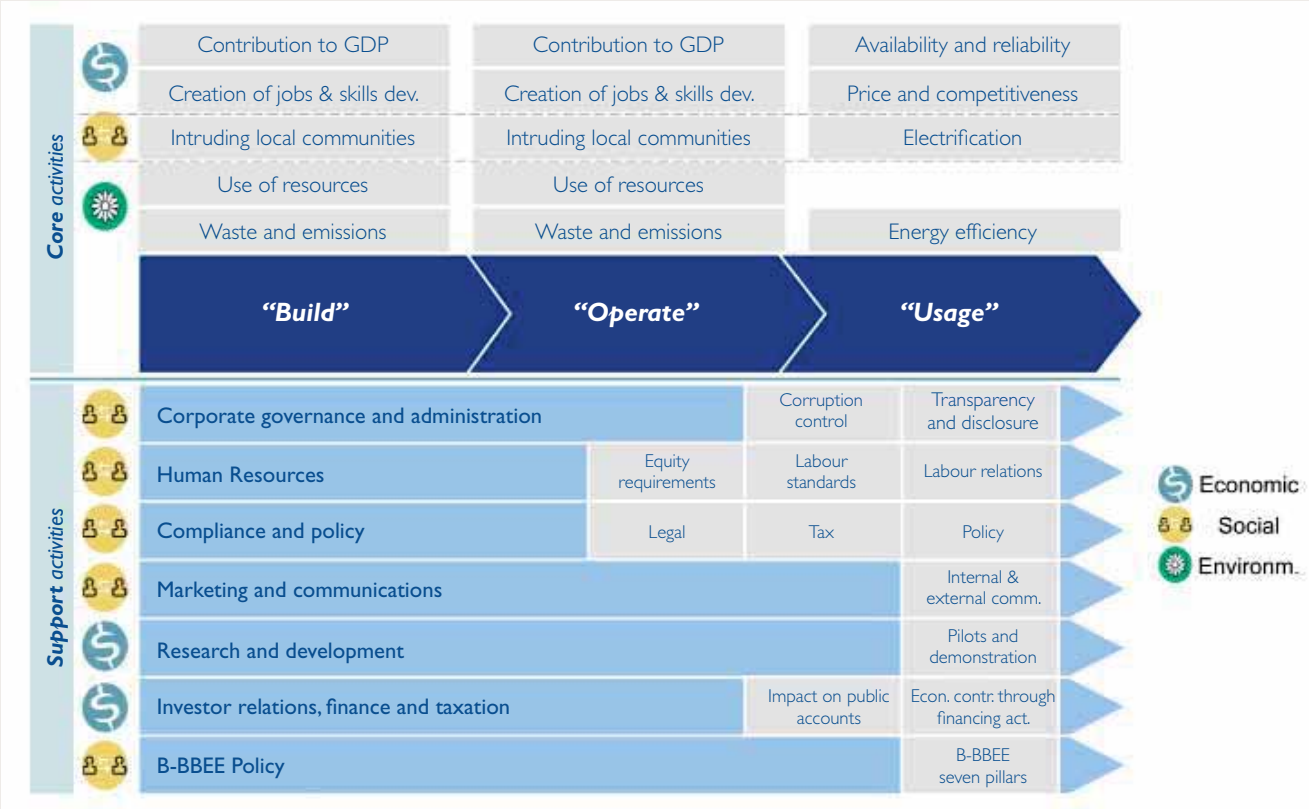
Eskom identified the sources of impact with respect to the three major activities of the company: building new facilities, operating these facilities and, ultimately, providing electricity to South Africans. Around each of the three core activities, the Eskom factor methodology details the main sources of economic, social and environmental impact. More than 150 indicators were identified, evaluated and consolidated to determine the Eskom factor.

3. Developing understanding

Key activities to complete this step are to define the most relevant impacts for the given development context, engaging with stakeholders to refine the assessment and to use this input to revise understanding in order to provide a balanced result.

To determine the relevance and significance of areas of impact, key questions are posed: "Would it have happened without Eskom?" and "Does Eskom have influence over it?" The resultant major impacts were grouped with respect to South Africa's developmental goals and portrayed in a single image, referred to as the Eskom Factor Heat Map. This Heat Map was the basis of engagement with stakeholders, as detailed on page 69.

Figure 5: Eskom Factor Heat Map Framework



Source: Eskom, WBCSD, BCG analysis.

4. Planning for action

Finally, Eskom is not only seeking insight into its impacts but is 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.

Methodology continued

For a description of the application of the methodology, please refer to the Medupi case study detailed in Annexure 1.

A word from the President of the WBCSD

It is with great pleasure that I see the first Eskom Factor Report coming to life, an important contribution from one of the members of the WBCSD and our aspiration to achieving the 2050 vision.

The world is facing challenges that require a major transformation in how we manage companies and govern the world, particularly in the next 10 years – the "Turbulent Teens", as the WBCSD calls this period in its Vision 2050 report. Nevertheless, these times also present huge opportunities for those companies that understand society's challenges and the need for innovative solutions.

The Eskom factor initiative, whose report is based on the WBCSD Measuring Impact Framework, enables Eskom to have a fair assessment of its economic, social and environmental footprint. These insights also enable Eskom to be better informed about local, national and global sustainability issues, to factor these into decision making and to move towards the WBCSD 2050 vision.

I stand ready to support Eskom and its leadership to contribute to a more sustainable world.

Björn Stigson
President of the World Business Council for Sustainable Development

The following section discusses the results of the assessment and the extent of the Eskom factor.

The Eskom Factor

"A tree is known by its fruit."

The Eskom Factor

Given Eskom's size and the scale of its economic, social and environmental footprint, Eskom's activities are pivotal in the development of South Africa, in particular through six areas of influence, both positive and negative:

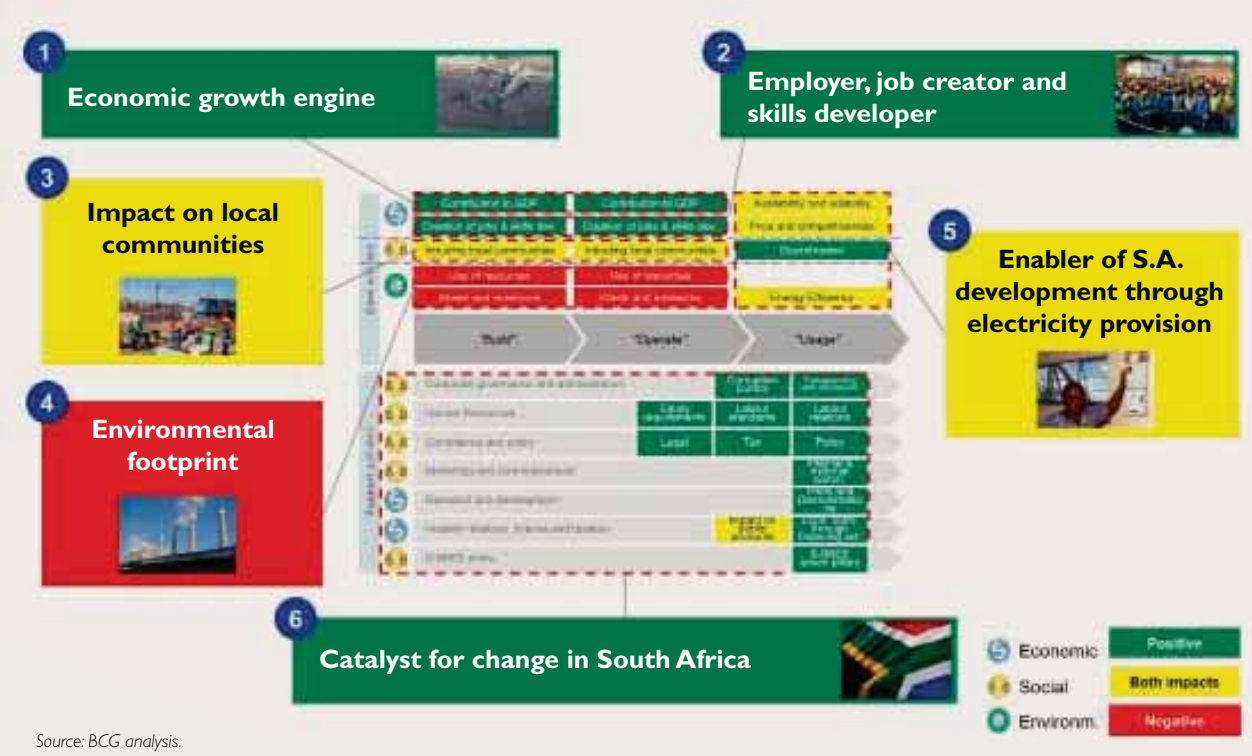
1. **Economic growth engine**
2. **Employer, job creator and skills developer**
3. **Impact on local communities**
4. **Environmental footprint**
5. **Enabler of South Africa's development through electricity provision**
6. **Catalyst for change in South Africa**

The result of the Eskom factor indicated the nature of Eskom's economic, social and environmental footprint for the 2011 financial year. The assessment delivers a clear message: Given the sheer size and the type of impacts, Eskom's activities contribute to shaping the development of South Africa, in particular through the six areas of influence, depicted below.

The nature of the impact of each of the six areas is depicted as largely positive, negative or both, using the following symbols. It is important to note that the positive and negative ratings do not refer to Eskom's performance with respect to managing an impact – the rating is simply intended to indicate whether a type of impact is generally negative, generally positive or has both positive and negative attributes.

- – A green dot indicates that the type of impact is largely positive.
- – A yellow dot indicates that the impact has both positive and negative attributes.
- – A red dot indicates that the type of impact is largely negative.

Figure 6: Eskom Factor Heat Map and Eskom's six key areas of influence



Source: BCG analysis.

1. **Economic growth engine:** Contribution to the economy through direct economic value-add and indirect impacts of provision of primary energy, capital investments projects, wages and other operational expenditure.

2. **Employer, job creator and skills developer:** Provision of direct and indirect jobs, new jobs through expansion of operations and formal and on-the-job skills development.

3. **Impact on local communities:** Employment and education of local people, provision of infrastructure and low impact relocations.

4. **Environmental footprint:** Minimisation of impacts on the natural environment through improved efficiencies.

5. **Enabler of South African development through electricity provision:** Support of government's objective to advance electrification, investment to enhance availability and reliability of electricity supply.

6. **Catalyst for change in South Africa:** Working as a role model for responsible business in South Africa through adherence to standards, regulations and government policies; upholding accountability, transparency and responsibility in daily business operations.

1. Economic growth engine

On-going impact on Gross Domestic Product (GDP)

Direct GDP impact through the local portion of the capital investments, primary energy, wages and other Opex as a % of South Africa's 2010 GDP. Eskom is the largest coal and logistics buyer in South Africa.

Direct GDP impact of about 3% of South Africa's GDP

Economic stimulus through new-build projects

Capital expansion programme to 2018 amounts to R340bn, is one of South Africa's largest economic stimuli. This includes two of the world's largest dry cooled, coalfired power plants.

R47bn capital investment in 2011

Development of new industries in South Africa

Money strategically spent to nurture sustainable development of new industries in South Africa.

Eskom contracted, on average, 60% local content for the mega new-build project spend during their construction.

80% contracted local content in 2011

Promoting shared growth

Support for principles of New Growth Path. Surpassed B-BBEE target for the first time in 2011. Active role beyond South African borders in particular in the SADC region.

52% of expenditures on B-BBEE-compliant companies in 2011

● – A green dot indicates that the type of impact is largely positive.

The Eskom Factor continued

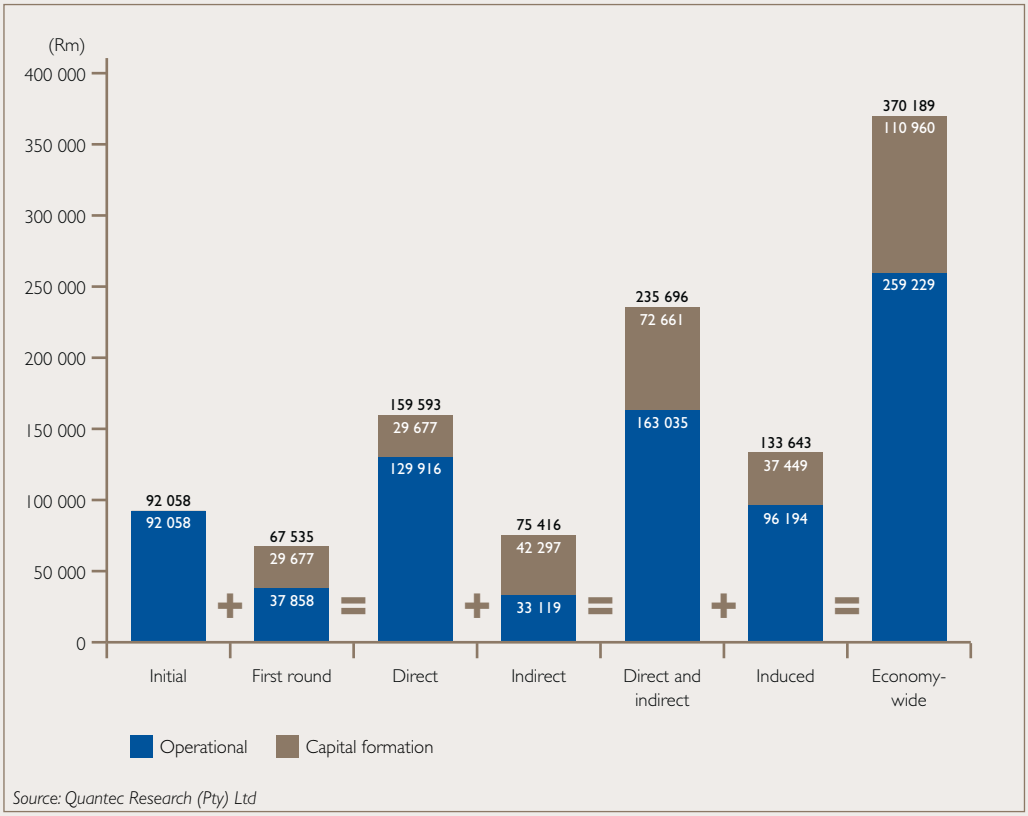
Ongoing GDP contribution

Eskom's impact on South Africa's economy is extensive. Eskom's economic value added to the South African economy at group level reached R42.1bn in the 2011 financial year. This figure refers to the fraction of revenues that remains after deducting all the primary energy and other operating expenses and represents the value created exclusively by Eskom's provision of electricity in the South African economy.

In 2010, Eskom contributed approximately 1.3% of total South African GDP through its core activities – the generation, transmission and distribution of electricity. However, Eskom (through the provision of electricity) also supports a range of other industries that supply it with goods and services ranging from coal, metals, engineering and construction services, petroleum and financial and business services. During 2010/2011, Eskom spent more than R53.6bn on goods and services needed to produce electricity. According to estimates by an independent economic consultancy (Quantec Research (Pty) Ltd), approximately 3% of South Africa's GDP in 2010/2011 could be traced back to the ripple effects of Eskom's direct spend and impact on its suppliers. Further details on this study, are available online[1].

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. Finally, when the employees of Eskom and its suppliers re-spend their salaries and wages in the economy, further economic activity is generated, and this is known as the induced impact of Eskom. In total, approximately 7.4% of South Africa's GDP can be traced back to the direct, indirect and induced impacts of Eskom – this can be thought of as the organisation's total economic footprint.

Figure 7: Eskom impact on output, 2010/11



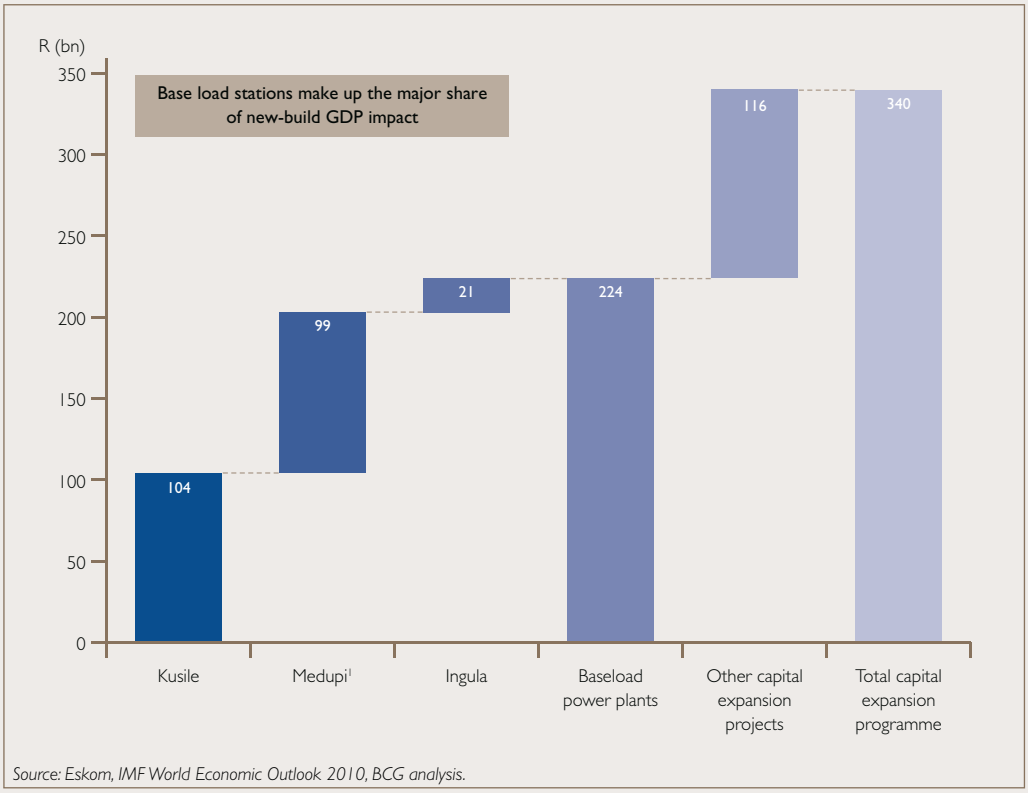
Source: Quantec Research (Pty) Ltd

Economic stimulus through new-build projects

Eskom is well positioned to support the continuing requirement for new capacity in new power stations and power lines, which will constitute further economic stimulus for many years to come. Eskom is currently building two of the world's largest dry-cooled, coal-fired power plants and a pumped storage scheme, returning three mothballed power stations to service, and investing in improvements to the transmission grid. All together, the total capital expansion programme until completion in 2018 is estimated at R340bn, excluding capitalised interest as depicted in the following graph.

[1] *www.eskomfactor.co.za/GDPstudy.*

Figure 8: Eskom capital expansion programme main components



Source: Eskom, IMF World Economic Outlook 2010, BCG analysis.

In the form of the Integrated Resource Plan, government is planning further capacity required beyond the current Eskom build programme. Through its experience with the current build programme, Eskom is well positioned to support the expansion plan, continuing to contribute to South Africa's GDP.

Development of new industries in South Africa

As a producer of many of the world's minerals, South Africa is well positioned to encourage beneficiation and, with that, added value for the economy. By making additional electricity available through the generation capacity expansion programme, Eskom is ensuring that new industries wanting to establish in South Africa are able to receive the necessary power. Perhaps more important than the size of the impact on the South African economy is the way in which Eskom's investments support social development in South Africa. Through its policies, Eskom wants to ensure that its investments create both sustainable jobs within South Africa and lasting value for the country's economy.

One key lever to reach these objectives is to ensure the use of local South African content and foster the growth of new industries in South Africa that will remain economically viable after the completion of Eskom's investment programmes.

Through the three mega new-build projects (Medupi, Kusile and Ingula), Eskom has already awarded a total contract value of over R65bn to local South African suppliers; and in the 2011 financial year, Eskom achieved 80% of local content in new-build projects. These figures do not include the additional local spending beyond these contracts or Eskom's internal costs.

A relevant example of the impact of the localisation policies is Hitachi Power South Africa, one of Eskom's local suppliers. After being awarded the contract for the manufacturing of boilers for two of the new power stations, Hitachi Power Africa built permanent boiler manufacturing facilities in South Africa, which

will continue to provide jobs far beyond the scope of the contract. Pfisterer is another case where localisation has been a demonstrated success. A more detailed description of these case studies is found below.

Case study: HITACHI Inspire the Next

The Hitachi contract sparked significant debate in recent years. In 2007, Eskom awarded the contracts for boiler works at the Medupi and Kusile power stations to Hitachi Power Africa. The overall contract volume amounts to R38.5bn. Hitachi Power Africa is jointly held by Hitachi Power Europe, Makotulo Investments & Services and Chancellor House Holdings. It is the latter shareholder, the investment arm of the ANC, which has given rise to speculation about whether Eskom is funnelling state money to the ANC.

A report prepared by Deloitte & Touche (which is on public record) found the tender evaluation to have followed due process and the subsequent award of the contracts to be fair.

As with all parts of Eskom's investment programme, it has also been the aim to use this large contract as a means to drive sustainable and shared economic growth within South Africa. Consequently, the contract includes the commitment over the life of the contract to a 60% share of local content.

In addition, Hitachi Power Africa has committed to investing more than R1bn in a localisation investment programme, as well as to training 1 400 artisans and 60 engineers. Heating is a large requirement for many South African industries and commercial buildings. Boilers and the skills to build them will continue to have a local market as the economy expands.

Case study: PFISTERER

Over the past few years, Eskom has awarded contracts worth more than R550m to Pfisterer, a company that specialises in the manufacturing of transmission and distribution equipment.

As a result of being awarded these contracts, Pfisterer moved the global manufacturing of its 275 kV insulators and hardware from Germany and Switzerland to Pietermaritzburg in South Africa. Since the start of these contracts in 2008, the company's operations have grown into a world-class export-oriented business employing more than 500 people. This makes Pfisterer the third-largest employer in Pietermaritzburg. The company has invested close to R40m in its development in South Africa.

Pfisterer is not only a large employer but also one that shows a clear commitment to the shared growth ambitions of our country. With the assistance of Eskom, Pfisterer established a

B-BBEE-compliant company named Speedcraft Manufacturing. Later, Eskom assisted Pfisterer in establishing this as a black-women-owned (BWO) entity.

While the company's presence in South Africa and the jobs that it creates were sparked by Eskom's contracts, its current export-focused strategy has created a sustainable company operating independently of future Eskom contracts.

Promoting shared growth

At the core of Eskom's procurement practices is support of the shared growth principles of the new National Growth Path (NGP) and the broad empowerment of South Africans.

Since the introduction of the B-BBEE Codes of Good Practice on 9 February 2007, Eskom has been working to comply with the new standard and to focus its sourcing activities on B-BBEE-compliant suppliers. It is Eskom's goal to allocate at least 50% of their expenditures to B-BBEE-compliant suppliers. During the 2011 financial year, Eskom surpassed this target for the first time, allocating 52.4% of its expenditures to B-BBEE-compliant suppliers.

Localisation and Eskom's purchasing policies

As a company owned by the people of South Africa, Eskom feels a special responsibility to act in the interest of the people. This is why they are supporting the government's New Growth Path (NGP).

Only tenders from suppliers who achieve a certain localisation score on this scorecard are evaluated in the first place, and in their tender evaluation, localisation criteria account for 20% of the tender evaluation points, with the other 80% being given for price and quality.

Eskom has developed a localisation scorecard to rate potential suppliers, which consists of the following elements:

- **Local content (value added in South Africa)**
- **Large black supplier (LBS)**
- **Black women-owned (BWO)**
- **Small black enterprise (SBE)**
- **Skills development**
- **Job creation.**

2. Employer, job creator and skills developer

Employer and job creator

Providing numerous jobs both internally and at suppliers. By applying family multiplier, more than 516 000 people sustained by Eskom.

More than 129 000 people employed in Eskom cloud within South Africa

Contribution to job diversification

New-build programme allows for the creation of jobs on manufacturing, construction, business services, amongst other industries.

Over 60 000 jobs in non-mining, related industries' suppliers

Potential job losses

According to a recent macro-economic study an estimated 16 000 jobs could potentially be lost due to price increases. Inclined Block Tariff is designed to protect low income/low energy users.

16 000 potential job losses out of 18.5m employed due to forecast price increases

South Africa's largest training ground

Extensive training programme for Eskom employees. Eskom suppliers required to train their workers, leaving behind an up-skilled workforce.

Around 298 000 employee training days achieved, equivalent to seven days training per employee

● – A green dot indicates that the type of impact is largely positive.
● – A red dot indicates that the type of impact is largely negative.

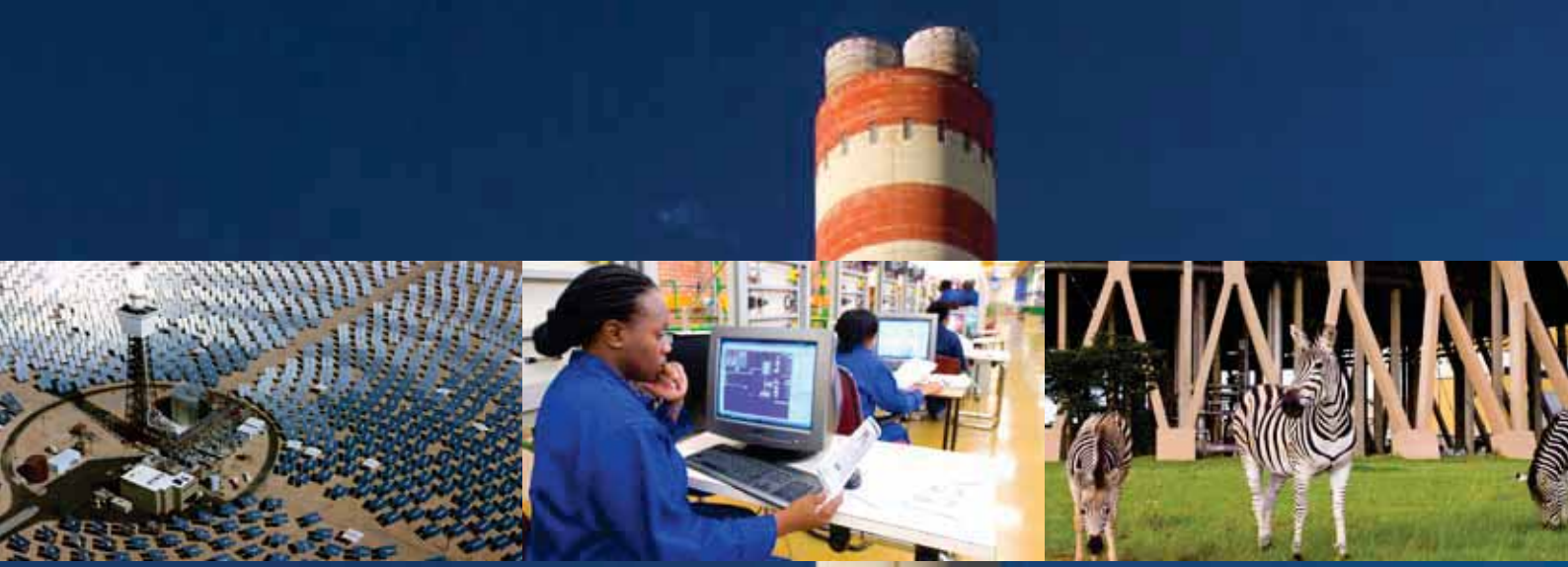
Employer and job creator

With unemployment rates in South Africa reaching 24% of the economically active population in December 2010, job creation and skills development are among our country's most important challenges. Within the Eskom Group, direct jobs are provided to close to 41 800 people. This makes Eskom one of South Africa's top 20 employers.

However, as the impact on the economy reaches far beyond Eskom's own premises, the same is true of Eskom's impact on employment. For its operations, Eskom purchases more than half of South Africa's annual coal production. As a labour-intensive industry, thousands of jobs are sustained, attributable to Eskom activities. Eskom is indirectly responsible for an estimated 32 000 jobs at coal mining companies such as Anglo American, Exxaro and BHP Billiton.

Beyond primary energy, Eskom spends more than R25bn on other products and services used in daily operations, ranging from power plant maintenance to business services. In particular, the construction industry, as well as manufacturers of machines and other industrial equipment profit from Eskom's orders.

Moreover, by investing in power generation facilities and infrastructure improvements, Eskom is helping to create jobs with these contractors. These jobs are created mainly at the construction sites for Medupi, Kusile and Ingula power stations and involve positions of various skill levels, from untrained labourers to engineers and architects.



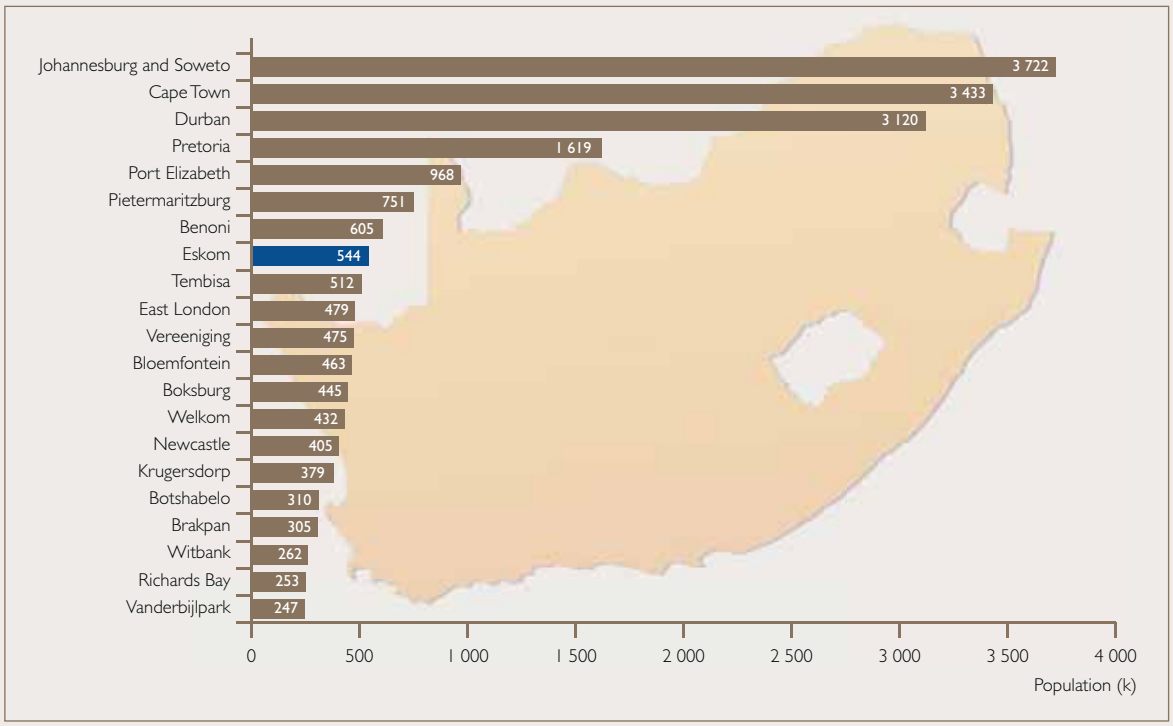
The Eskom Factor continued

In total, more than 129 000 people in South Africa are employed (formally) within the Eskom cloud. Eskom's suppliers will, in turn, also demand goods and services from other suppliers, creating jobs in these entities and stimulating economic growth through increased personal disposable income. However, this is not under Eskom's control and is therefore not included in these estimates of employment.

If we assume on average that every person employed in the Eskom cloud supports three other family members, it is fair to say that Eskom supports the lives of over 516 000 people in South Africa. If this extended "Eskom family" were a city, such a city would be South Africa's eighth largest, somewhere between the sizes of Benoni and Tembisa.

A study conducted by Pan-African Investment & Research Services points to a negative impact on the entire macro economy in terms of decreasing GDP, investment and overall job creation due to the price hikes which have been approved (25.5% on average over three-year period followed by 6% over seven-year period). Under the dynamic TSME model (within the Pan-African investment study) in particular, the 2010 – 2013 price increases are estimated to result in 1.1 per cent negative impact on GDP and a reduction of approximately 16 000 jobs in the overall economy, based on 2009 employment figures.

Figure 9: Size of population sustained by Eskom compared to major South African cities



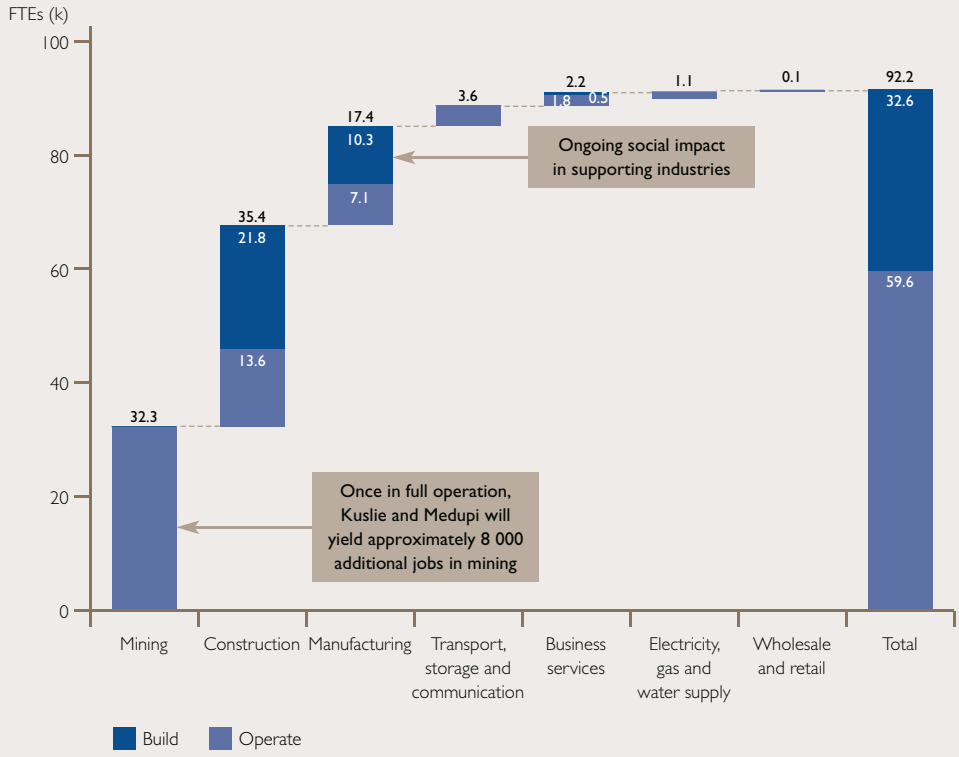
Contribution to job diversification

In addition to its spending on primary energy, Eskom sources more than R25bn worth of goods and services from different industries ranging from power plant maintenance to business services during its normal operations, included in the light blue areas in the graph below. In particular the construction industry, cement and steel manufacturers, as well as manufacturers of machines and other industrial equipment, profit from Eskom's orders.

While the operations of these support industries have their own positive impact on development, they also have a character very different from mining. They are more regionally distributed and require different skill sets. As a result, a broader set of South Africans from different educational backgrounds and regions can profit from Eskom's activities.

This contributes to a more balanced South African economy: As a result of the diversification in terms of distribution of jobs created, the economy is better protected against cyclical downturns and sudden changes in the prices of a few basic resources.

Figure 10: Jobs in supplier base attributable to Eskom in 2011



Source: Eskom, BCG research, BCG analysis.

Note: Number of jobs created during Build phase in industries other than Manufacturers, Construction and Business services is negligible; a "job" is defined as permanent employment (12 months), contract directly to Eskom or one of its suppliers. Figures relate to financial year 2011.

Vhathu ndi mbilu ya shango, ya imali a fa. (Tshivenda)

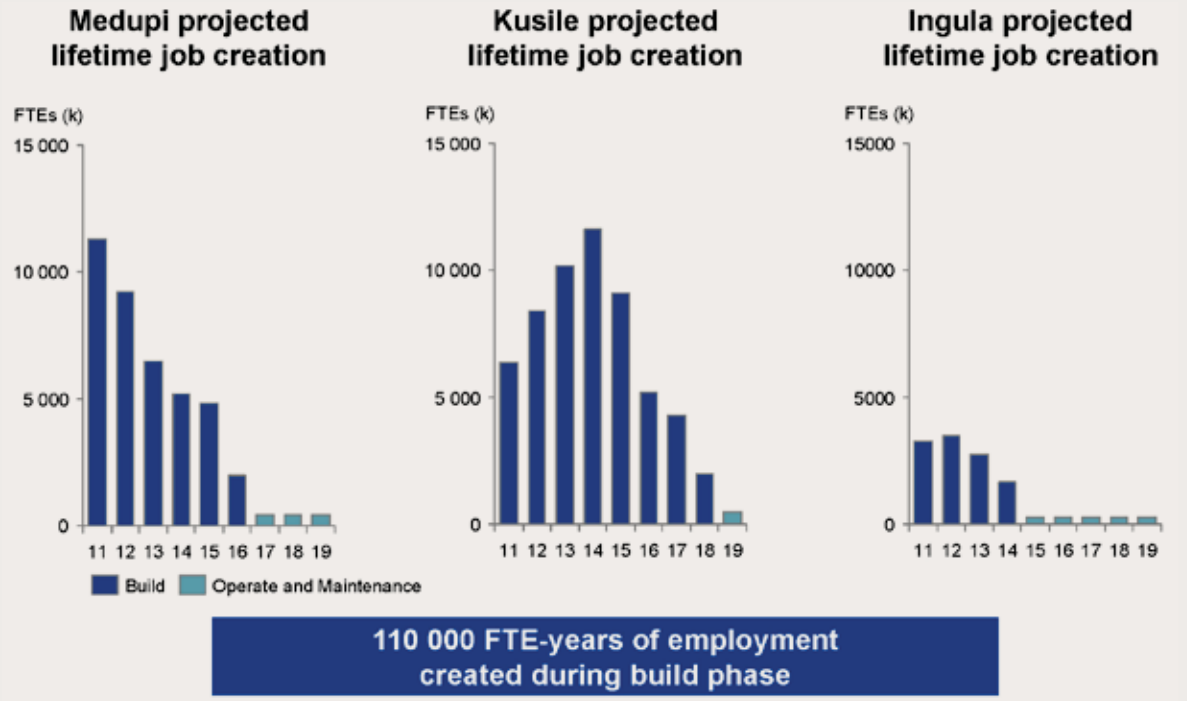
People are the heart of a country. If it stops, the country dies.

South Africa's largest training ground

Currently, more than 33 000 people are employed through current capacity expansion programmes. Of course, these employment figures will change as the new power stations reach completion.

As part of our Human Resources planning, it is estimated that the employment figures for each of our three mega new-build projects (Medupi, Kusile and Ingula) will follow the patterns depicted in figure II below.

Figure 11: Projected lifetime job creation of new-build projects



Note: 2011 Financial Year data based on real data, rest are projections a "job" is defined as permanent employment (12 months), contract directly to Eskom or one of its suppliers. Source: Eskom.

In the peak years of the projects, more than 3 000 people will be employed on-site at Ingula, more than 11 000 at Medupi and more than 11 000 at Kusile. However, these high employment figures during the construction stage are temporary. After the plants are completed, only a few hundred people will be employed in plant operations and facility maintenance.

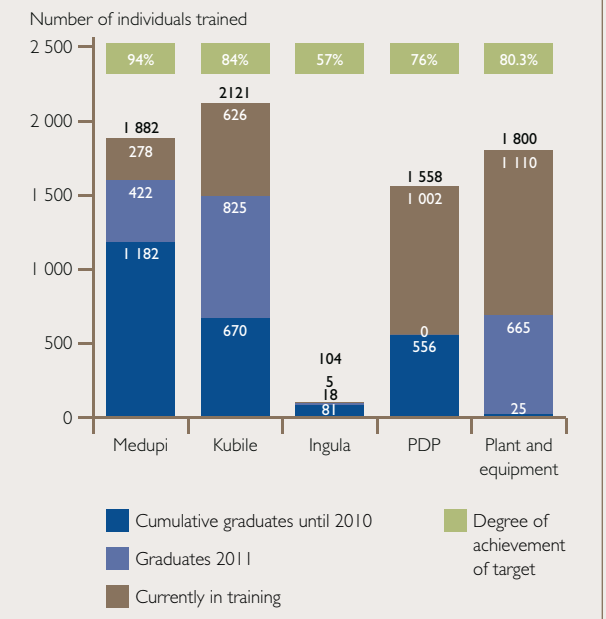
Nevertheless, people keep the skills they acquire through formal and on-the-job training while working on Eskom projects. "Jobs go away, but skills stay." Moreover, a large proportion of the jobs created by Eskom's new-build projects are for unskilled and semi-skilled labourers who will receive formal and informal training and develop skills that will substantially improve their chances of finding new jobs.

In addition to on-the-job training opportunities, Eskom has a clear commitment to the training and development of its employees through the Eskom Academy of Learning (EAL). The EAL has been repositioned as a professional centre of excellence, tasked with delivering learning in Eskom. In the financial year 2011, there was an internal learners' pipeline of close to 5 300 trainees and, together with external training providers, Eskom provided approximately 298 000 learning days to their employees (equivalent to seven days per employee). In developing these training programmes, Eskom has invested R998m in training and development throughout the 2011 financial year, corresponding to 5.7% of labour costs and positioning Eskom in the upper quartile compared to utilities in the US and Europe.

Training and development initiatives go beyond Eskom's gates, as more than 7 000 workers at Eskom's contractors have been trained since the inception of the projects and are thus contributing to the productivity of our country.

This is why Eskom proposes calling the new-build projects South Africa's largest training ground. Eskom is confident that these skills can be brought to use in the near future, as there is a significant number of additional electricity and energy-related investment projects in the pipeline beyond these current projects.

Figure 12: Cumulative number of people trained per project by 2011



Note: Figures relate to financial years.
Source: Eskom.

Finally, through Eskom's new contractor academy programme, potential new contractors are being trained in the regions around the new-build projects in technical and business skills. The objective is to equip them with the necessary skills to successfully negotiate contracts and perform the work within the required timeframes and quality standards, enabling them to grow their businesses and to become financially sustainable. To date, 167 small business owners and contractors have successfully completed the eight-month programme – and already some of them have developed into contractors to Eskom.

Case study:
Capacity development
Further education & training (FET) programme

One example of Eskom's capacity development is the Further Education & Training college programme. The FET college programme is one of the flagship initiatives under the administration of the Eskom Development Foundation. Through its foundation, Eskom has committed R5m and R4.7m, respectively, over the past two years to equipping electrical and mechanical engineering workshops for selected FET colleges. Besides providing equipment to upgrade workshops, Eskom also engages in renovations necessary to create an environment in which successful learning can take place.

As one of South Africa's largest employers of people with a technical education background, Eskom benefits directly from the eventual up-skilling of our young workforce. But more importantly, the students at the supported FET colleges benefit from Eskom's engagement with their schools. Ultimately, our economy and society as a whole will reap the benefits of an up-skilled workforce.

3. Impact on local communities

Creator of local employment

New-build projects provide employment opportunities to locals; with further efforts through contractor academy programme.

About 54% of employees at new-build sites originate from the local districts

Significant infrastructure investments

Negative impact on road infrastructure mitigated by significant investments in road improvements.
Eskom investing in sewage, telecom and other infra-structure to the benefit of communities.

R110m invested in road repairs in 2011 of R950m allocated to 2013

Health and Safety

Commitment towards "zero harm" Eskom value through the pursuit of elimination of fatalities, peer reviews of risk control interventions and sharing learnings.

67 employee, contractor and public fatalities

Careful management of relocations

Negative impact on local people due to a need to relocate for infrastructure development. Relocations are managed carefully to ensure that the standard of living of the relocated families is maintained or improved.

40 families in total to be relocated to new homes specifically at Kusile and Ingula

● – A green dot indicates that the type of impact is largely positive.
● – A yellow dot indicates that the impact has both positive and negative attributes.
● – A red dot indicates that the type of impact is largely negative.


We are the Guardians of South Africa. We are powering this great nation.
Guardians make it possible by


ABNORMAL

Creator of local employment

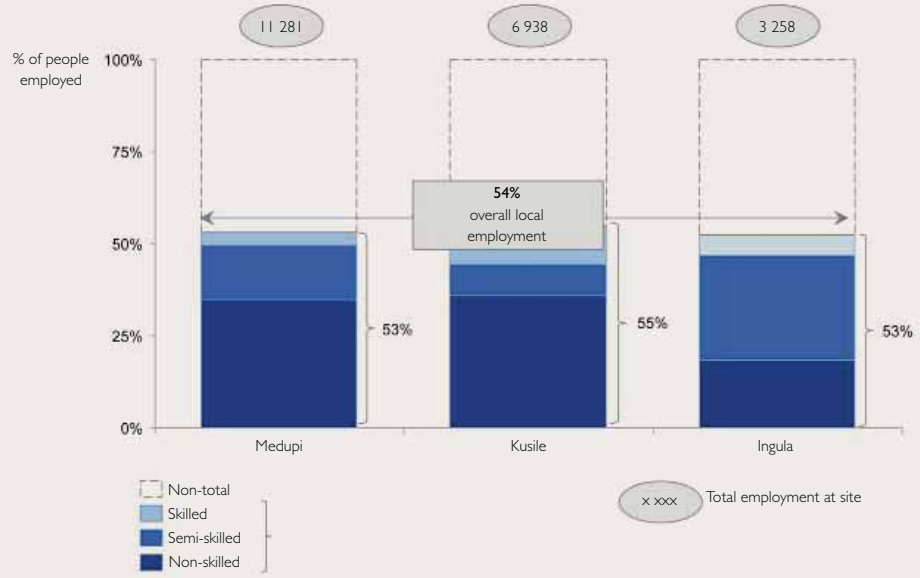
At each location where Eskom establishes operations, employment is created. As most of Eskom's facilities are outside the larger cities, in many regions Eskom is the largest employer in the district.

As mentioned previously, Eskom is committed to providing employment opportunities to the members of local communities.

In the 2011 financial year, more than 11 500 people employed by Eskom at the mega new-build projects Medupi, Kusile and Ingula came from the districts around the projects. This corresponds to approximately 54% of the total employment on those projects.

As shown in the graph below, the bulk of the local jobs created pertain to unskilled and semi-skilled labour.

Figure 13: Employment at new-build projects



Note: Local employment refers to the jobs in the specific region/district. Figures relate to financial year 2011.
Source: Eskom.

Significant infrastructure investments

Eskom facilities require certain supporting infrastructure to allow for ongoing operation. Therefore, in many of the communities where Eskom maintains a presence, Eskom has invested significant amounts in road, rail, sewage, telecommunication and other infrastructure, contributing strongly to the development of the local infrastructure throughout South Africa, and benefitting the local communities.

In fact, given the significant and multi-faceted investments made in local communities, there are examples where Eskom has played a major role in the economic development of whole towns. The cities of eMalahleni and Lephalale are just two examples of cities that have developed from coal mining towns into bustling regional hubs as a result of power stations being built nearby.

At the same time, Eskom's operations can result in a negative impact on the infrastructure in local communities. Currently 30.5Mt of coal is transported by road each year, causing considerable damage to the road surface on the transport routes, disruption to local traffic, noise and dust.

eMalahleni, Mpumalanga

Population: 500 000

- Huge industrial development followed the economic activity and infrastructure development caused by the coal mines.
- Major industrials include Evraz Highveld Steel and Vanadium Limited, Columbus Stainless Steel and Vanadium and Ferro Metals (Pty) Ltd.

Eskom is very aware of the negative impact on roads in local communities and is committed to addressing this. In the 2011 financial year alone, R110m was invested in road repairs and improvements. Eskom has also committed to invest in road infrastructure over the next five years to continue these improvements. In the future, Eskom aims to increase the share of coal transported by rail, reducing the amount of coal transported by truck each year from the current tonnage to 6Mt in 2017.

Health and safety

Eskom employees have access to comprehensive occupational health and wellness services. For example, Eskom offers an assistance programme, including consultation on work-life balance, counselling on traumatic events and health evaluation. Regarding chronic diseases, Eskom has implemented initiatives to combat tuberculosis and HIV/AIDS and has also run a large campaign on awareness of HIV status among the staff. While benefiting from these services, Eskom employees are also proud to give back, and the blood donor programme is supported frequently by staff at various Eskom offices.

In the area of safety, Eskom has over the past few years reduced the number of employee injuries and fatalities. However, the dramatic increase in the number of contractors involved in the large construction programme has brought safety challenges. In the 2011 financial year, Eskom experienced six fatalities within the company and 18 within its contractors. This performance remains severely negative, and Eskom continues its efforts to bring this number down to zero.

To achieve this goal, Eskom has implemented a safety programme covering its operations which is centred on the following initiatives:

- Elimination of fatalities
- Peer reviews of risk control interventions conducted at selected sites
- Sharing of best practices
- Work stoppages to discuss risks and share lessons learned
- Robust action management on repeat incidents.

For Eskom's nuclear facility, in the 2011 financial year, no workers exceeded the annual dose limit of 20mSv. All potential exposures to radiation are kept at minimal levels in line with the internationally accepted As Low As Reasonably Achievable (ALARA) principle. Similarly, the maximum effective radiation dose to the public, calculated on a conservative basis, is kept as low as possible. For the 2011 financial year, the radiation dose to the public was at 0.0043 mSv, more than 50 times lower than the limit of 0.250 mSv set by the National Nuclear Regulator and more than 200 times less than the international limit of 1.0 mSv.

All Eskom's contractors are expected to follow the same zero-tolerance approach to these rules, regardless of any safety protocols they have implemented for themselves. Furthermore, all contractors are expected to comply with Eskom's safety, health, environment and quality (SHEQ) policy.

Focusing specifically on the performance of our primary energy suppliers, figures released by the Department of Mineral Resources in January 2011 show that South Africa's coal mines recorded 13 fatalities. Historically, coal mining has been a dangerous activity (not least because of the heavy machinery utilised in coal excavation); however, improvements in mining methods combined with rigorous health and safety procedures, standards and worker education and training have resulted in significant improvements in this regard.

Most unfortunately, there are also public fatalities which are related to Eskom's products and services. Last year, 43 people lost their lives, 22 of them through electrical contacts and the remainder through road accidents, which include Eskom's vehicles or coal trucks.

Careful management of relocations

Due to the large-scale nature of our power generation projects and the need to operate a national power grid, it is sometimes unavoidable for Eskom to purchase land and to ask local families to relocate from their original homes. Since the start of the new-build programme, 220 people have been relocated at the Kusile and Ingula sites.

In these cases, Eskom does it's best to improve the lives of the people affected. Eskom offers them new housing above their previous standard of living. Nonetheless, people have a strong sense of belonging to the place where they have lived and that it is not always possible to re-create this. This process requires a careful management of relocations to which Eskom is strongly committed. For more information on how Eskom managed the relocation of 22 families, please consult the "relocation management at Ingula" case study.

Case study:
Relocation management at Ingula

The Ingula project is a pumped storage scheme which effectively "stores" excess electricity that is produced during periods of low electricity demand and then releases that electricity during periods of high demand or "peak load". This balancing effect allows Eskom to store electricity produced by lower-cost power stations that are able to run more or less continuously and to avoid the additional cost of building even more electricity generation capacity that will only run for a few hours a day.

Simply put, a pumped storage scheme works by pumping water uphill, usually during the night and then letting the water run downhill through a turbine, usually during early morning and late afternoon when electricity demand is the highest.

The Ingula project includes the construction of two dams and two reservoirs which cover a portion of former wetland with water. At the site of the top dam (in the Free State province), these reservoirs will affect the lives of 16 families who previously used the area as grazing land for their cattle. At the site of the bottom dam (in the KwaZulu-Natal province), six families living on subsistence farming will no longer be able to follow their traditional lifestyle, because grazing their cattle near the construction site is too dangerous.

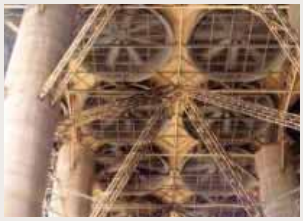
Relocating these families against their will was never an option considered by Eskom. Through consultation and agreement, Eskom aimed to minimise the negative impact on their lives, taking the following steps:

- Additional land was acquired close to their original community.
- A new and better house was built for each family.
- Infrastructure, such as water and road access, was provided.
- The new houses were electrified, including a small solar power station at the top site.
- Agricultural training was provided to enable them to transform their farming activities from subsistence farming.
- It was ensured that all people remained within their original communities.

Through this inclusive approach, Eskom was able to reach an agreement with all six families at the bottom dam site in KwaZulu-Natal. For the top dam site in the Free State province, Eskom is in the process of reaching final agreement with the 16 families affected and expect that they will start moving into their new homes in 2012.

4. Environmental footprint

Use of resources



Water and coal most prevalent used resources.
Roll out of dry cooling and alternative technologies, expected to bring water consumption down by 60bn litres until 2030.

327bn litres of water consumed

CO_2 and climate change

Significant CO_2 emissions driven by high-reliance on coal. CO_2 emissions per kWh to be reduced through more efficient and new technologies.

230Mt of CO_2 emitted in 2011 – future reduction of relative CO_2 emissions

SO_X, NO_X and particulates

Implementing filtering technologies will bring down SO_X and NO_X emissions responsible for local air pollution significantly.

1 810kt of SO_2 and 977kt of NO_X emitted in 2011

Nuclear and domestic hydro

Low carbon nuclear power generation second largest portion in our generation mix.

Around 2.4GW of low CO_2 emission nuclear capacity

● – A green dot indicates that the type of impact is largely positive.
● – A red dot indicates that the type of impact is largely negative.

Use of resources

Our environmental footprint of using coal for electricity generation is multi-faceted.

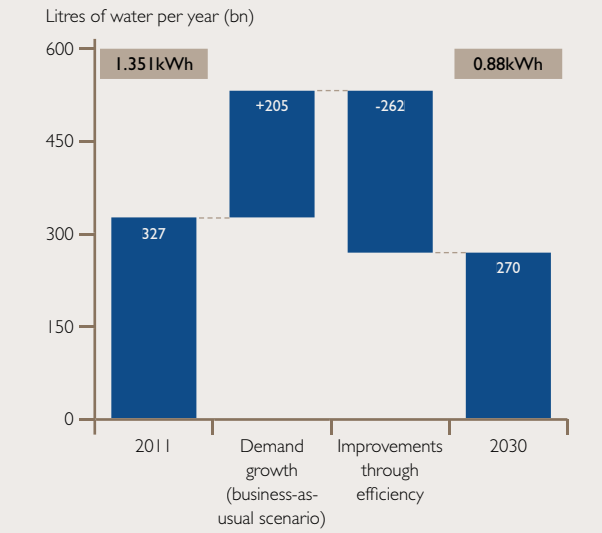
By consuming coal for power generation, the resource is depleted. Eskom's coal consumption reached 124.7Mt in the financial year 2011, more than half the estimated South African coal production. The most recent Statistical Review of World Energy by BP estimated South Africa's coal resources and reserves at more than 30bn tons. Taking into account South Africa's estimated annual coal production of 242Mt, it has been extrapolated that South Africa's coal will last for about 150 years. The South African Council for Geoscience is shortly due to release an update of South Africa's coal resources, which were last quantified in 1987. Eskom has developed an optimal portfolio of long-term, medium-term and short-term coal supply agreements in order to ensure a sustainable coal supply.

Eskom's coal-focused generation mix also requires a significant use of water, a scarce and important resource in South Africa. In the 2011 financial year, Eskom used about 1.35 litres of water to generate each kilowatt-hour of electricity, making Eskom presently responsible for around 2% of the annual consumption of South Africa's fresh water supply.

Over the coming years, Eskom will further increase its water usage efficiency to reduce water consumption. Both coal-fired new-build projects, Medupi and Kusile, will use dry-cooling technology, which will reduce Eskom's relative water consumption per unit of electricity produced, by as much as 90% compared to a wet-cooled station. In future years, Eskom also intends to apply a number of new innovative water-saving technologies, such as mine water desalination (i.e. using wastewater from mines for cooling instead of fresh water), cold lime softening (a filtering technology that uses less water than conventional methods) and other improved water management strategies.

Through these measures, Eskom aims to bring down water consumption per unit of electricity produced from the current 1.35 litres per kWh to 0.99 litres per kWh in 2030, representing a reduction of approximately 26%. Should these measures prove effective, instead of requiring 530bn litres of water to generate electricity in 2030, it is projected that 270bn litres will be required.

Figure14: Eskom annual water usage in coal power plants



Note: Figures relate to financial years.
Source: Eskom.

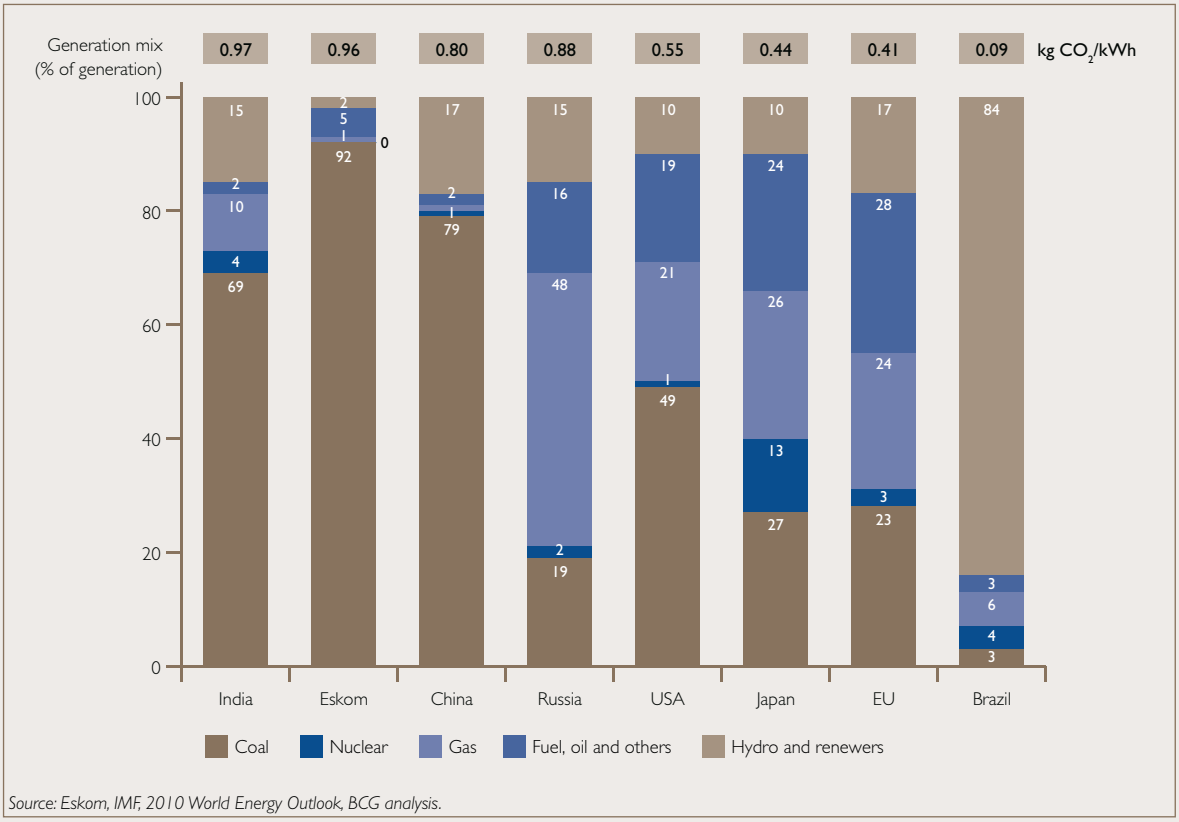
The full details of Eskom's future water plans are currently under development and are in the process of consultation with the government, the regulator and other stakeholders. Eskom actively seeks to involve the government and other stakeholders in laying out a comprehensive plan to minimise Eskom's water usage, as these activities have wide-ranging implications for other industries and agriculture.

CO_2 and climate change

During the 2011 financial year, 93% of the electricity Eskom produced was generated from coal-based power plants as the dominant electricity generation technology in the power station fleet. These stations were built to utilise a low-cost and plentiful local resource and to be capable of burning lower-quality coal, leaving better coal for use by industry or as exports. However, using coal to generate electricity results in a significant environmental footprint. In the 2011 financial year, Eskom emitted a total of 230Mt of carbon dioxide into the atmosphere, at a rate of 0.96kg of CO_2 per kWh of electricity produced. Greenhouse gas emissions from the electricity sector are estimated to be around 45% of South Africa's emissions as estimated in the national inventory for 2000. When benchmarking Eskom's carbon footprint against a set of seven leading developed and developing economies, Eskom ranks as the second-highest emitter of CO_2.

When looking at the power generation mix of these countries, it becomes clear that the level of emissions is driven primarily by the present generation mix and that, as countries come to rely less on coal-fired power generation, their CO_2 footprint is reduced significantly.

Figure 15: Generation mix and CO_2 intensity of Eskom and peer countries



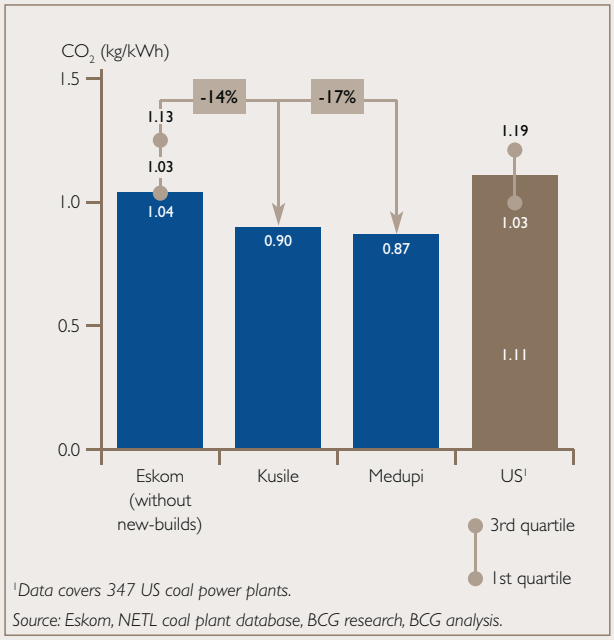
Source: Eskom, IMF, 2010 World Energy Outlook, BCG analysis.

Inkqayi ingena ngentlontlo. (Xhosa)
All accomplishments have humble beginnings.

The Eskom Factor continued

Despite the high reliance on coal-fired power generation, Eskom is committed to operating its power stations as efficiently as possible in order to reduce CO_2 intensity. Comparing the performance of Eskom's coal fleet, to a peer such as the US, it becomes clear that Eskom's average coal power plant's CO_2 emissions per MWh are significantly lower, as shown in the graph below. Moreover, the new coal-fired power stations, Medupi and Kusile, will emit around 15% less CO_2 per MWh than the average for the rest of the coal fleet.

Figure 16: CO_2 intensity comparison of coal power plants: Eskom versus US plants



[1]*Data covers 347 US coal power plants.*

Source: Eskom, NETL coal plant database, BCG research, BCG analysis.

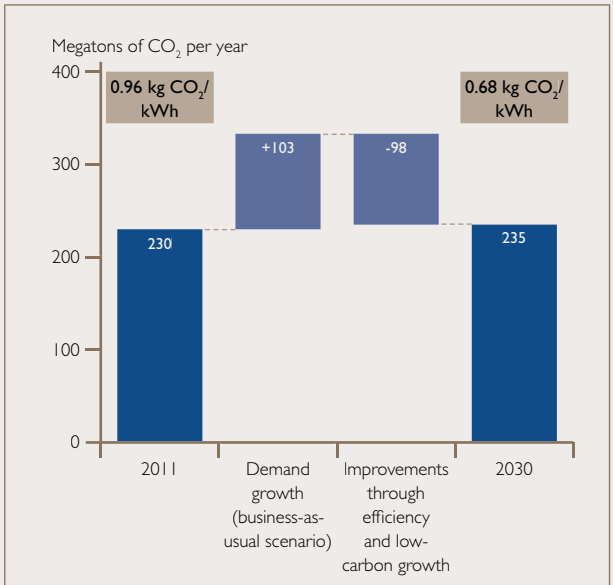
Despite the planned gains in CO_2 efficiency within Eskom's coal fleet, its absolute CO_2 footprint will continue to grow in the short term, as new coal-fired power plants come online to meet South Africa's rapidly increasing electricity demand. Only through the combination of CO_2 efficiency gains and the introduction of new technologies such as renewables, natural gas, clean coal, underground coal gasification (UCG), nuclear and imports, will Eskom be able to bring down total emissions of CO_2.

It is therefore a strategic imperative for Eskom to reduce its carbon footprint and implement a proactive approach to identify and manage the inevitable impacts of climate change. In the 2011 financial year, Eskom updated and reviewed its Climate Change Response Strategy in light of the changing national and international circumstances and to meet its future emission targets. Eskom's revised Climate Change Response Strategy includes the following six-point plan:

1. Adaptation to climate change
2. Energy efficiency measures throughout Eskom facilities
3. Power generation diversification
4. Innovation
5. Investment through carbon markets
6. Progress through advocacy, partnerships and collaboration.

It is estimated that relative carbon emissions could be reduced to 0.68kg per kWh by 2030, in which case emissions of CO_2 are at least 100Mt less than what it would have been, had Eskom continued with current electricity generation technology. This strategy and target requires the support of Eskom's shareholder, the South African government, through the necessary allocation of new capacity to Eskom, allowing it to add nuclear, gas and renewable power generation plants to the Eskom fleet.

Figure 17: Change of annual Eskom CO_2 footprint until 2030[1]



[1]*Subject to the support from the shareholder and the necessary allocation of nuclear and renewables to Eskom.*

Note: Figures relate to financial years.

Source: Eskom, BCG analysis.

Eskom has an imperative to continue to ensure security of the electricity supply as the economy grows, while also actively preparing for a carbon-constrained future. Eskom will continue to develop and strengthen partnerships with the government, business and civil society while ensuring the alignment of Eskom policy in terms of climate change and its implementation at all levels of the company.

Environmental management

Eskom's environmental footprint management goes beyond reducing carbon emissions and mitigating climate change. Eskom devotes significant resources to mitigate its total impact on the environment. In the 2011 financial year, this added up to R1.4bn spent on, for example, ensuring that processes and technologies are in place to monitor emissions and provide environmental control, water management, waste management and eradication of alien vegetation.

Case study:
Eskom-EWT partnership

Eskom's thousands of kilometres of power lines have an impact on the habitats which they pass through, particularly on birdlife. This has resulted in a long-standing partnership with the Endangered Wildlife Trust (EWT) with the objective of mitigating these environmental impacts. By bringing together ornithological, conservation and engineering expertise, the partnership aims to minimise the danger of power lines to birdlife and similarly the economic impact of bird interactions on Eskom's infrastructure, in terms of security of supply.

EWT experts and Eskom employees jointly track bird mortalities along the power lines. Together, they then look into ways to mitigate the negative effects. The most common solution to prevent the collision of birds with power lines is the installation of flight diverters.

Endangered Wildlife Trust

Eskom

Strategic Partnership

We are proud to report that, on average, it takes Eskom's Distribution division only little more than a month to follow up on reported incidents and to put mitigation measures into effect.

The Eskom Factor continued

SO_2, NO_x and particulates

Sulphur dioxide and nitrogen oxides (SO_2 and NO_x) have negative impacts on human health and on the habitat of animals and plants. They are also precursors to acid rain and atmospheric particulates (also known as aerosols). Further, nitrogen oxides contribute to depletion of the ozone layer. Where CO_2 is projected to have a negative impact on climate at a global level, SO_2 and NO_x impair the environment at a more local level.

Through Eskom's operations, the utility was responsible for the emission of 1 810 kt of SO_2 and 977 kt of NO_x in the 2011 financial year.

Eskom strives to monitor and contain its impact on local air quality, understanding the potentially negative impacts on local communities. Eskom's air quality strategy was revised in line with government legislation, detailing how emissions from power stations will be further reduced to ensure compliance with the new minimum emission standards, and planning has started for retrofits of emission abatement technology at some existing stations. The Open Cycle Gas Turbine power plants built five years ago in Mossel Bay and Atlantis, Cape Town were already designed to include low NO_x burners within the power plant. The Kusile power station is currently being constructed with flue gas desulphurisation (FGD) advanced technology, which will reduce its SO_2 emissions by approximately 90%.

Nuclear and domestic hydro

Eskom has about 2.4GW (1 830MW nuclear and 600MW hydro) of installed low-carbon electricity generation capacity. In order to reduce carbon emissions, nuclear electricity generation is likely to play a significant role in Eskom's future capacity expansion in line with the Integrated Resource Plan (IRP) for Electricity 2010. At the same time, it is of the utmost importance that all nuclear power plants are operated under world-class safety requirements. In line with international expectations, Eskom continually improves the safety levels at Koeberg by enhancing its processes and nuclear safety culture, as well as by making physical modifications to the units. This is done by learning from both internal and international operating experience and by following international guidelines from organisations such as the Institute of Nuclear Power Operations (INPO), the World Association of Nuclear Operators (WANO) and the International Atomic Energy Agency (IAEA). This process of continual improvement through modifications to the physical plant, as well as operating processes and procedures, reduced the probability of an accident that results in damage to the nuclear fuel, to levels better than that proposed by the IAEA for new nuclear power plants.

Radioactive waste, of which Koeberg produces on average approximately 150 cubic metres of low and intermediate level a year, is stored at the Vaalputs waste disposal site in the Northern Cape. Used fuel from Koeberg is stored at the power station in specially designed fuel pools and used-fuel storage casks in accordance with the specified regulatory requirements. Provisions are made annually for decommissioning costs. For the 2011 financial year, these provisions amounted to R2.2bn for nuclear and other generation plants and R2.2bn for the management of nuclear fuel assemblies and radioactive waste.

Supplier assessment

Eskom is aware that its suppliers, especially the primary energy providers, have significant impacts and we aspire to provide a quantitative assessment of these significant impacts to address specific stakeholder feedback. The common key issues across all supplier sectors include: water and air pollution, climate change (carbon tax, rising greenhouse gas emissions, failure of climate change adaptation), waste management and recycling, volatility in energy and commodity prices, HIV/AIDS, health and safety, lack of training and education, skills retention, ethical behaviour and corporate governance, transformation and B-BBEE.

Eskom's supplier base includes some 16 000 suppliers. In order to prioritise, we considered the top 60% suppliers (by spend). These were categorised into the following sectors: business services, construction, electricity, gas and water supply, coal supply, transport, storage and communication, wholesale and retail, and an analysis of the publically available quantitative information on these suppliers was conducted. Data on the following areas was sought: total CO_2 emissions, total NO_x emissions, total SO_x emissions, total water used, and serious environmental incidents reported to the regulators in 2010.

Limited information was readily available in the public domain to quantify these impacts. This report has therefore focused attention on providing a qualitative assessment of the environmental impacts of Eskom's coal mining suppliers as primary energy purchases make up over 20% of total spend. The qualitative analysis revealed that Eskom's coal mining suppliers have the following material environmental impacts: water availability and quality and land use.

In addition to standard terms of contract, Eskom frequently specifies additional terms, for example, to ensure a sufficiently high standard of safety, health and environment practices. Eskom's stakeholders have expressed an expectation that Eskom should utilise its purchasing power to ensure environmental compliance as well (refer to the section on Stakeholder Engagement on page 69). It is pertinent to note that Eskom is committed to protect and promote a sustainable environment. As such, environmental requirements have been embedded in coal contracts with new suppliers or when existing supplier contracts are modified.

Environmental assessments

Eskom has established gate-keepers and criteria to be used in assessing new suppliers. These criteria are included in the contracts with mining suppliers, and are monitored by Eskom to ensure all conditions are adhered to. These conditions include all regulatory approvals as well as various risks (including environmental) that may pose an impact to the continuous supply of coal to the power stations.

Protection of water resources

South Africa is a water-stressed country with a legacy of mining and industry-driven pollution, combined with an aging water treatment and distribution infrastructure. Furthermore, climate change is likely to add significantly to the stresses on South Africa's water sources in the future.

The majority of Eskom's coal suppliers are based in water-stressed catchment areas such as the Olifants River Catchment and the Komati Water Catchment. Other catchment areas that may be impacted on by Eskom's coal suppliers include the Mokolo Catchment and the Vaal Catchment areas. Measures aimed at the efficient and responsible use of potable water are being investigated by certain coal suppliers, and Eskom supports them in these endeavours. These include, amongst others, the reuse of water within the mine and coal beneficiation plants.[1] In addition, certain mining houses together with Eskom are investigating increasing the use of treatment plants to supplement the water supply to power stations.

In protecting water resources, suppliers are influenced through Eskom's requirements and are required to have the requisite authorisations for their activities, amongst others, the Integrated Water Use Licence and must demonstrate adherence thereto.

Mine rehabilitation

Eskom, in terms of managing direct environmental liability for aspects associated with land rehabilitation, requires assurance from the coal mines that rehabilitation plans are in place and that backlogs for rehabilitation are addressed.

Supplier carbon footprint

The majority of the emissions, publically reported by the mining companies, would have resulted from electricity usage – on which Eskom is already reporting. As such, in the interest of avoiding double counting, Eskom has not included a figure for supplier carbon footprints.

[1]Mechanical process to improve the quality of coal prior to use

5. Enabler of South African development through electricity provision

Advancing electrification

Supporting the government's objective of advancing electrification – could reach universal access by 2020. Universal access could be achieved earlier with targeted funding.

4 million homes electrified since beginning electrification programme in 1991

Closing the supply gap

Current new-build programme, along with investments in transmission and distribution will significantly enhance availability and reliability.

6 TWh forecasted energy gap in 2011, managed through tight operational controls

Price and competitiveness

A 2011 NUS study of 16 countries found South African electricity price to be competitive, ranked the second cheapest in the world, with Canada first.

Despite recent price increase, South Africa electricity prices remain competitive

Energy efficiency initiatives

Major nationwide "49m" campaign launched recently. Substantial efforts to raise awareness of efficient use of electricity both for households and businesses.

R45m invested on 49m energy efficiency campaign in 2011

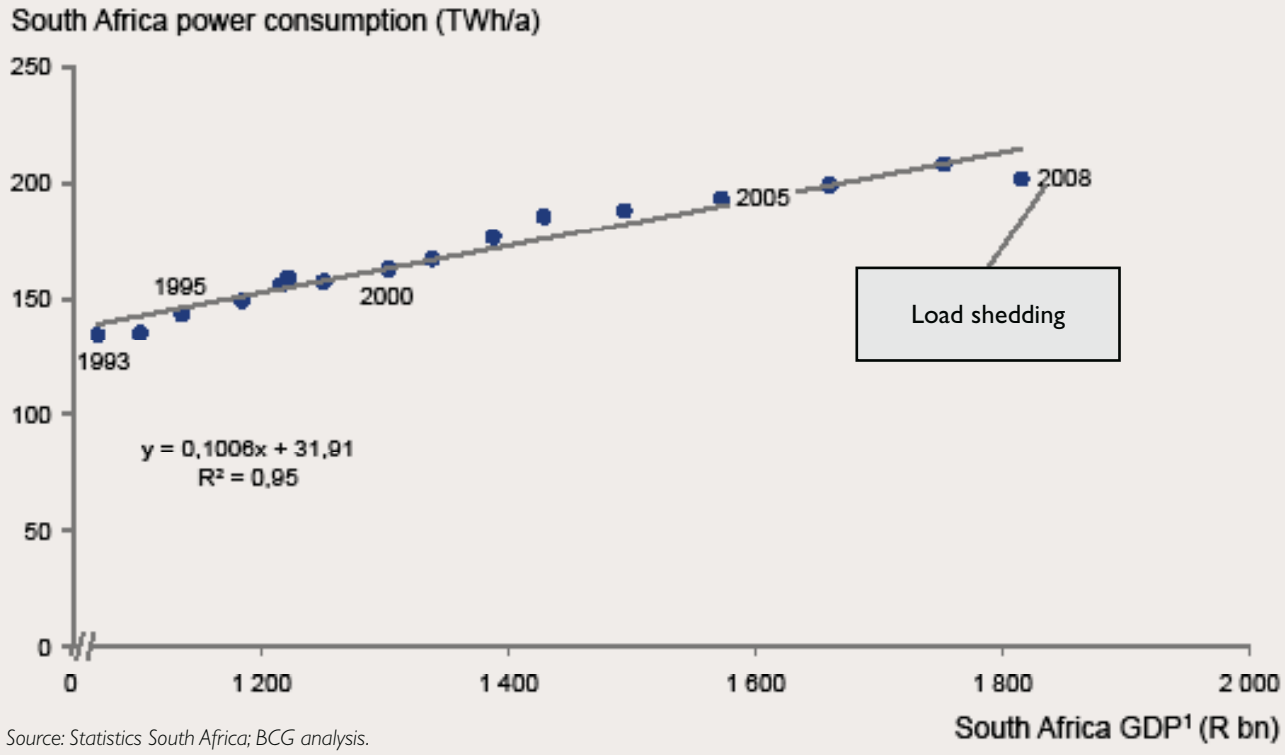
● – A green dot indicates that the type of impact is largely positive.
● – A yellow dot indicates that the impact has both positive and negative attributes.

Advancing electrification

The provision of electricity is one of the foundations of modern economies, as it empowers the people of South Africa and the enterprises they own or work for to create economic value. This strong relationship can be demonstrated by the historically close correlation between electricity consumption and GDP.

South Africa's GDP growth has been in line with growing electricity consumption over the past 18 years, especially as the economy relies heavily on energy-intensive industries for growth. Without a dramatic change in structure, growth in the economy will be driven by higher electricity consumption in the years to come.

Figure 18: Correlation between South Africa GDP growth and power consumption



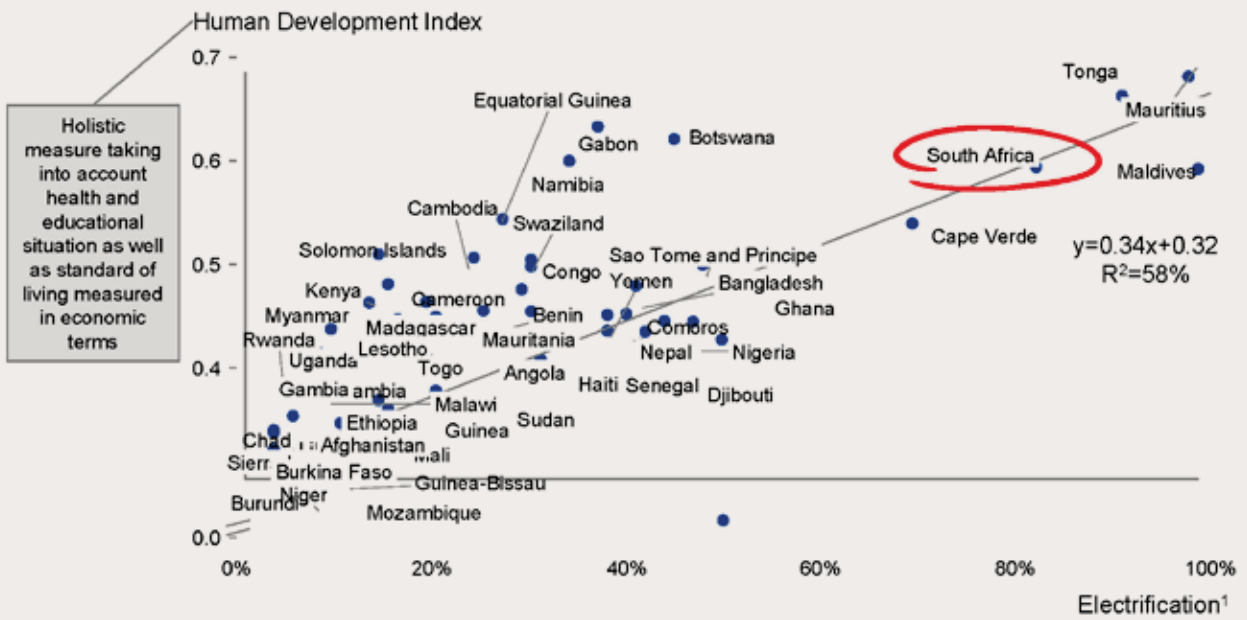
Source: Statistics South Africa; BCG analysis.

Moreover, advancing electrification has strong social benefits above and beyond economic growth. As pointed out in the 2008 study by the World Bank, *The Welfare Impact of Rural Electrification: A Reassessment of the Costs and Benefits*, families in non-electrified homes in South Africa spend more than one hour a day collecting firewood – with the majority of the burden falling on the women in these families.

Electrification not only allows this time to be put to more productive use, for example, by using the additional hours of light for educational purposes, as well as supporting better teaching methods through electronic media. It also helps to reduce the domestic burden for women and thus contributes to closing the gender gap. Furthermore, electric lighting enhances people's perception of safety and has in some regions had the positive effect of discouraging crime. In addition, electrification supports improved health outcomes by enabling refrigeration (from medicines to food) and medical technologies. Indoor pollution through displacement of domestic wood and coal burning can also be avoided through electrification or the deployment of gas.

With these multiple effects on people's living standards and quality of life, it is not surprising that electrification is also tied to human development. This relationship can also be demonstrated by plotting the Human Development Index – a complex measure of a country's development status, taking into account not only economic but also health and educational indicators – against the electrification rate for a set of developing economies and sub-Saharan countries.

Figure 19: Correlation between electrification and Human Development Index



Source: WHOXUNDP – BCG analysis.

Given the significant impact that electrification has from both an economic and a social perspective, Eskom has long been involved with the programme, supporting the government's objective of advancing electrification to achieve universal access in South Africa.

Eskom has helped to electrify four million homes since the start of the electrification programme in 1991. By the end of the 2011 financial year, 83% of South African households already had access to electricity. Eskom's aim is to connect the remaining approximately 2.5 million households in areas served by Eskom with the required funding support from the government.

In the figure below, past electrification undertaken by Eskom is plotted alongside the vision of how to achieve universal access by 2020 – an ambitious but important milestone for Eskom and for South Africa, providing a clear understanding of the historical trend associated with the number (and associated cost) of connections from 1994 to 2009:

Figure 20 (a): Number of annual grid connections

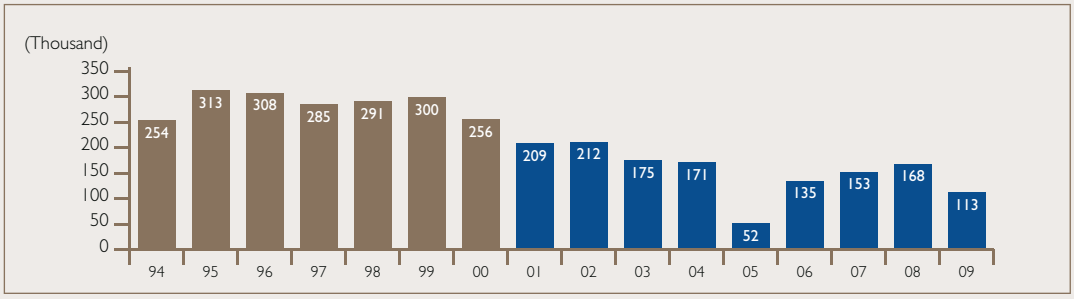


Figure 20 (b): Cost per connection

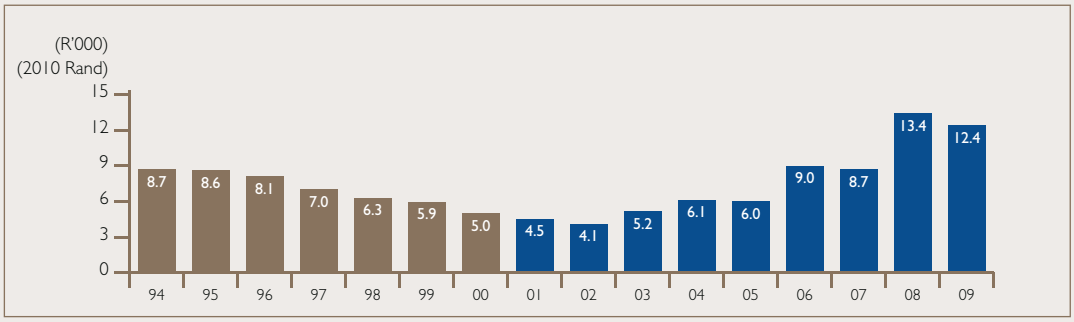
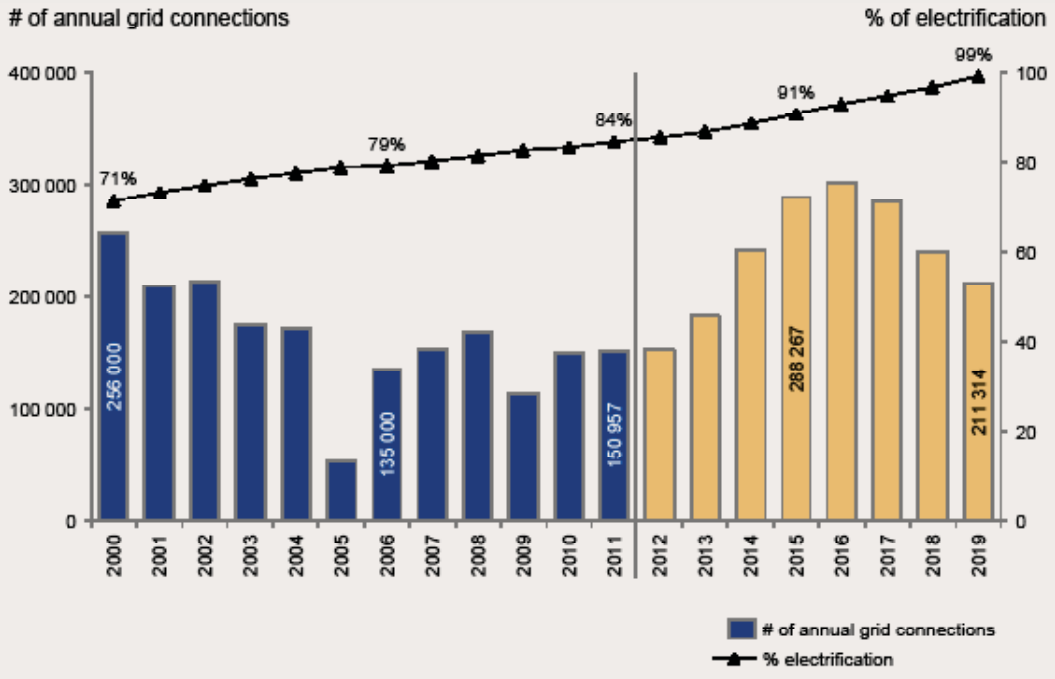


Figure 21: Past and future electrification in South Africa

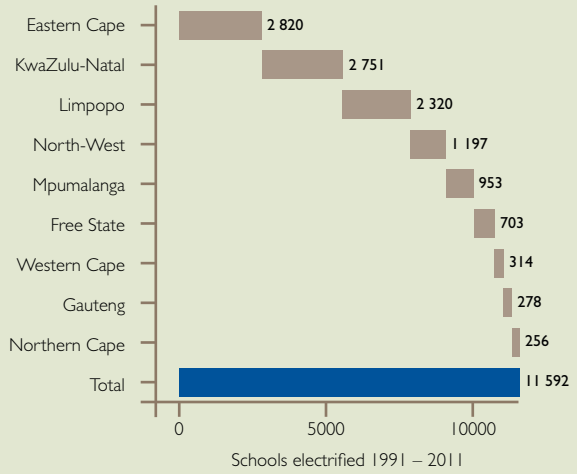


Note: Figures relate to financial years.
Source: Eskom, BCG analysis.

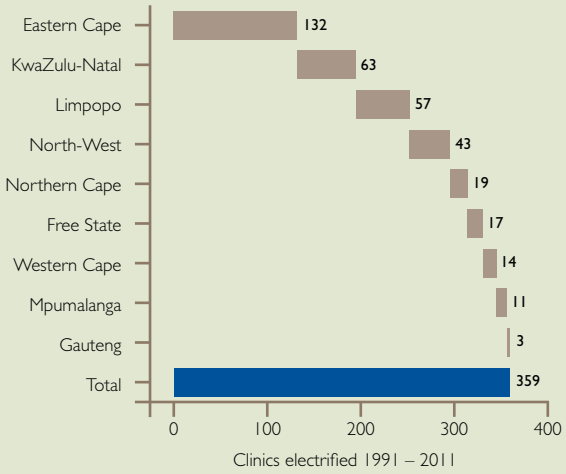
Case study:
Electrification of schools and clinics

The improvement of local infrastructure through strong social impact projects such as schools and clinics is a key corporate social investment priority for Eskom. Together with the National Electrification Fund, Eskom finances the electrification of schools and clinics in South Africa. Since 1991, Eskom has brought electricity to more than 11 000 schools and more than 350 clinics throughout the country.

Figure 22: More than 11 000 schools electrified since 1991



Close to 400 clinics electrified since 1991



Note: Figures relate to financial years.
Source: Eskom, BCG analysis.

Eskom played a facilitating role in non-grid electrification whereby, as agreed with the DoE and NERSA, Eskom was to identify areas that were prime for non-grid electrification (solar panels). The intention was that this would be a stop gap while these areas awaited electrification for the area to be grid electrified. Eskom recognises non-grid electrification as part of the solution in achieving universal access to electricity in South Africa.

Unfortunately, the programme collapsed in 2004, as it proved not to be viable. The DoE took over the management of non-grid electrification from NERSA and appointed new service providers to continue with the programme.

Closing the supply gap

Since 1994, our economy has grown stronger: GDP has risen by 67% since then. However, over the same period, generation capacity increased by only 14%. From 2005 onwards, this led to a mismatch between supply and demand and a shortfall of energy supply that eventually led to the load shedding that occurred in 2007 and 2008.

Not only was this a major disruption for the wider public, it also harmed South Africa's competitiveness as an investment destination. A reliable and sufficient supply of electricity is crucial to attract new fixed investment and provide an environment in which the economic growth of our country can be promoted.

Since April 2008, Eskom has not initiated any load shedding in South Africa. This has been achieved through improved demand and supply management, through customers' efforts to reduce their electricity intensity and contractual demand reductions for major industrial customers during peak demand periods.

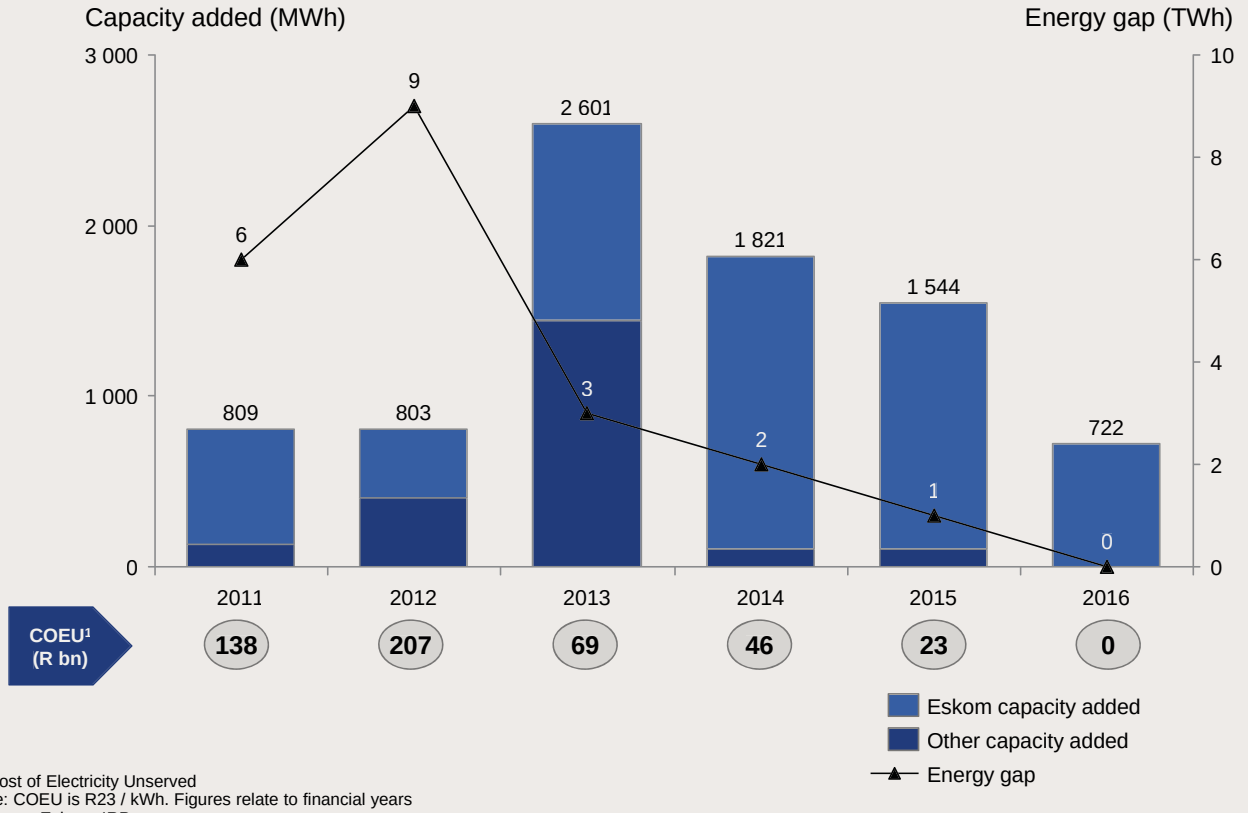
While Eskom is now able to reliably continue serving the wider public, the fact is that some key customers still cannot expand their businesses due the limited supply. It is estimated that for the 2011 financial year, there was a gap of up to 6 TWh between potential demand and available supply. This comes at a significant cost for the South African economy as a whole. In the 2008 study "Estimating the

cost to the economy of electricity outages", Eskom estimated the average cost of electricity un-served (COEU) for the overall economy to be around R23 per kWh. Given the current estimated gap in supply as described above, the overall cost to South Africa of the electricity gap amounted to more than R100bn in the 2011 financial year.

As a result, Eskom has embarked on building the two new coal-fired stations, a pumped-storage station, bringing back stations that were mothballed and upgrading a number of key transmission lines. In all, Eskom will have spent more than R340bn on this additional electricity generation capacity. Given the projected growth in demand, combined with the long lead times required to implement new electricity supply projects, the gap in supply is only projected to be closed by 2017.

Eskom also bears in mind that its existing fleet is aging, and some existing stations will need to be de-commissioned in the 2020s, requiring new capacity to replace them. Servicing these needs, plus any growth in demand for electricity beyond 2017, places South Africa on a path of infrastructure expansion, for many years to come. Eskom acknowledges its obligation to support government in its endeavours to meet the economic development needs of the country.

Figure 23: Generation capacity additions and energy gap in South Africa

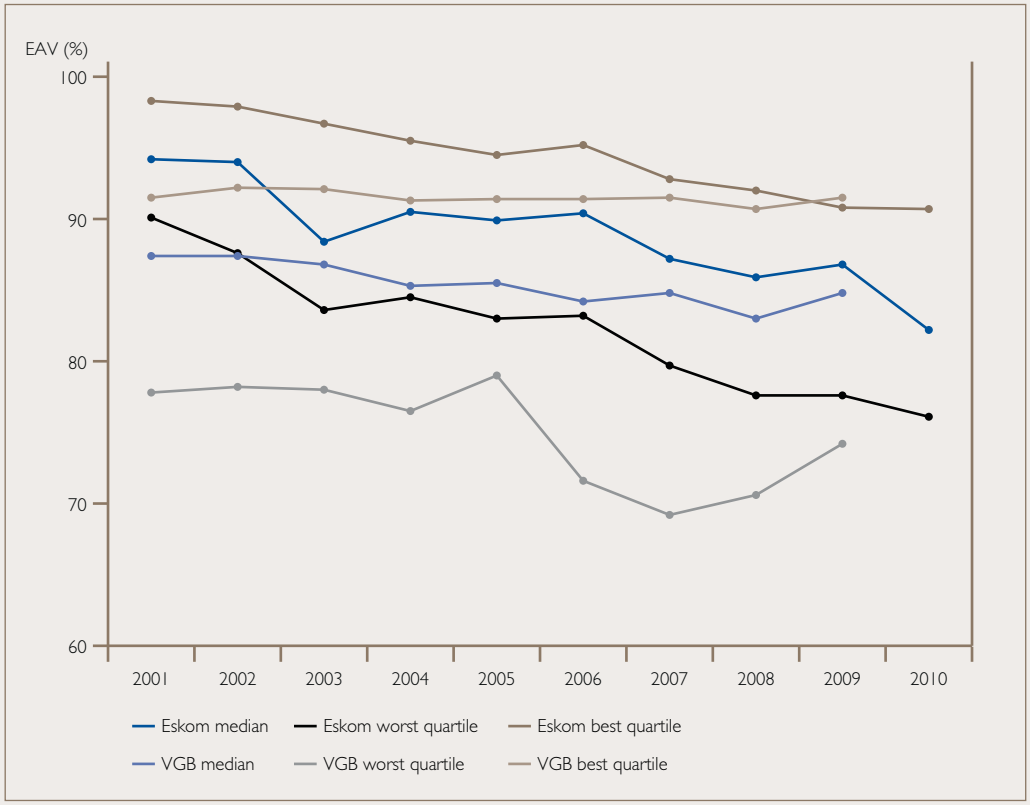


1. Cost of Electricity Unserved
Note: COEU is R23 / kWh. Figures relate to financial years
Sources: Eskom, IRP

Although the system as a whole has insufficient capacity, it is encouraging to note that the existing coal-fired power station units are very reliable. This is demonstrated in an international benchmark study of Eskom's energy availability against that of a number of its major European counterparts. The study is conducted by VGB[1], the Association of Large Boiler Operators. The graph below demonstrates the performance of Eskom's coal-fired generating units in comparison to other VGB member performance. Eskom's best quartile is generally above the other VGB member best quartile, and the Eskom worst quartile is consistently above the VGB member worst quartile.

[1]VGB (Verband der Großkessel-Besitzer e.V) was founded in 1920 as the federation of the owners of large boilers.

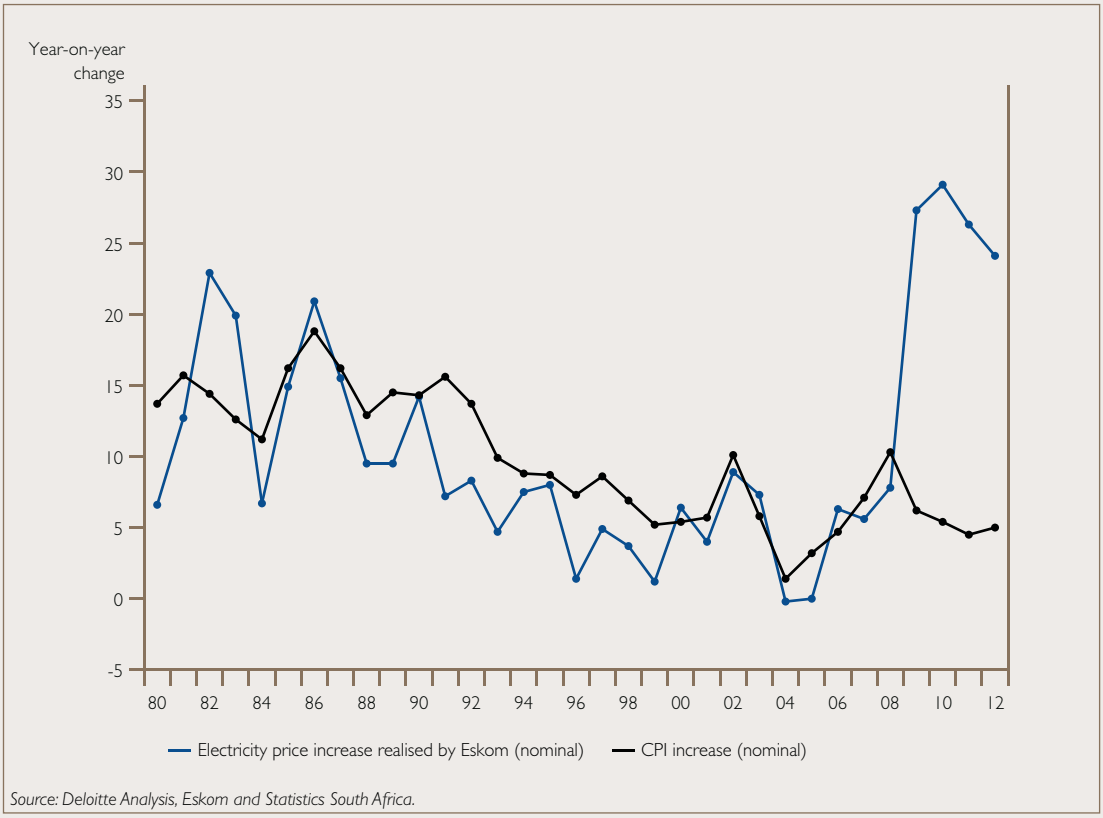
Figure 24: Benchmarking EAF all coal sizes 2001 – 2009 120 VGB units (excluding Eskom) *(benchmark data available only until 2009)*



Price and competitiveness

For much of the past three decades, electricity prices in South Africa have been low and declining in real terms as can be seen in the figure below, where electricity price increases have not kept up with inflation. However, from 2008 the trend in prices took a dramatic turn. This increase in electricity prices is the outcome of a policy to charge cost-reflective tariffs. Demonstrating that Eskom is on a sound financial footing is a necessary pre-condition to raising the investment required to fund the building of new electrical supply capacity projects. Between 2008 and 2011 real electricity prices rose by 78% however, despite the significant increases, electricity prices in South Africa are still low by international standards and do not yet reflect the full economic cost of supplying power. (Deloitte, 2012).

Figure 25: Comparison of increase in electricity prices and CPI inflation (1980 to 2011)

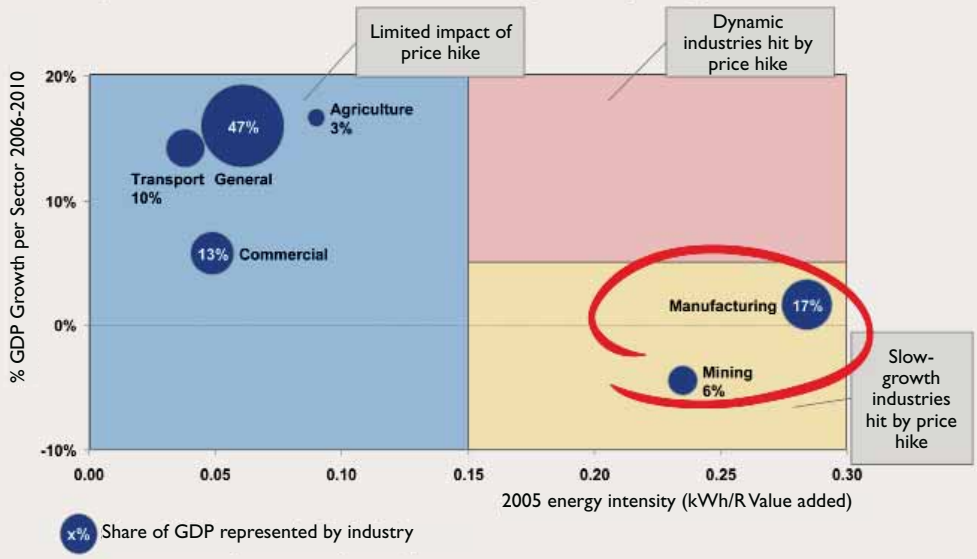


Source: Deloitte Analysis, Eskom and Statistics South Africa.

In the past, the focus had been on ensuring that electricity prices were kept below the rate of inflation. During the 17 year decline in real electricity prices, consumers came to benefit from some of the most inexpensive electricity in the world.

The historically low electricity prices in South Africa have attracted energy-intensive industries, such as mining and manufacturing. These energy-intensive industries have become an important cornerstone of the economy, directly and indirectly providing employment and contributing approximately 23% of South Africa's GDP. Naturally, these industries will be affected most by rising energy prices.

Figure 26: Comparison of South African industries in terms of energy intensity and growth 2006 – 2010

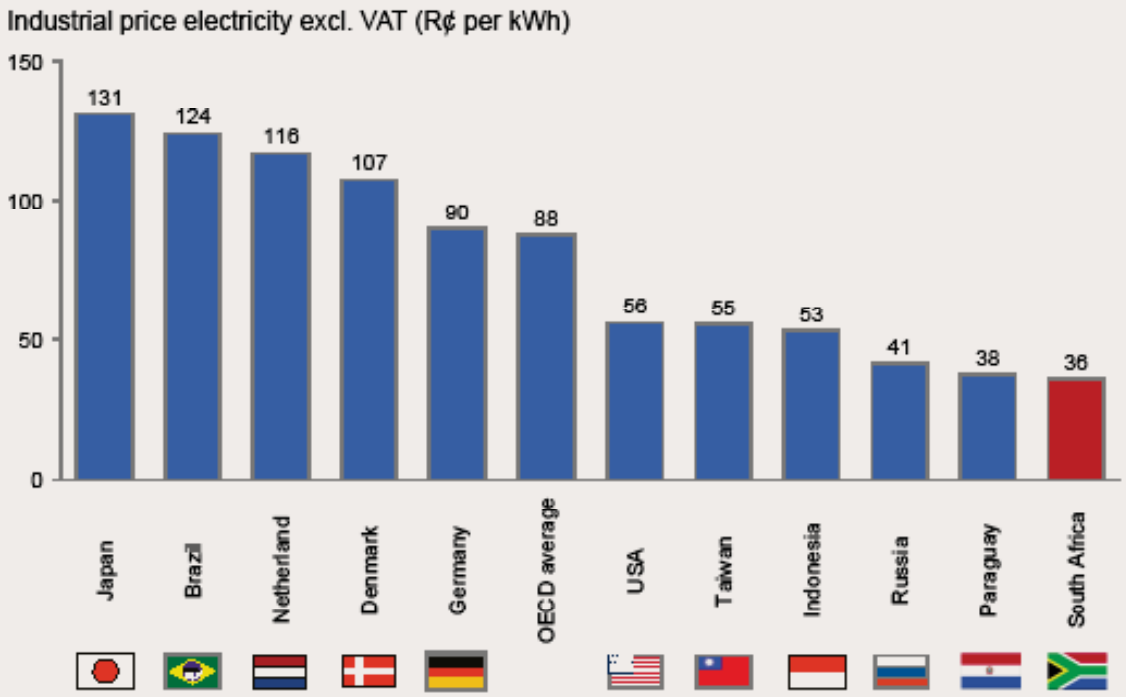


Note: 2006-2010 GDP data in constant 2005 prices; "General category subsumes electricity, gas and water, finance, real estate and business services, and personal services.
Source: Eskom, Statistics South Africa, BCG analysis.

The Eskom Factor continued

In fact, until 2008 the industrial price of electricity, excluding VAT, was R0.36 per kWh, significantly less than the equivalent prices in both developed countries such as Japan, the Netherlands or Germany and fast-developing countries such as Russia or Indonesia as reported by the International Energy Agency.

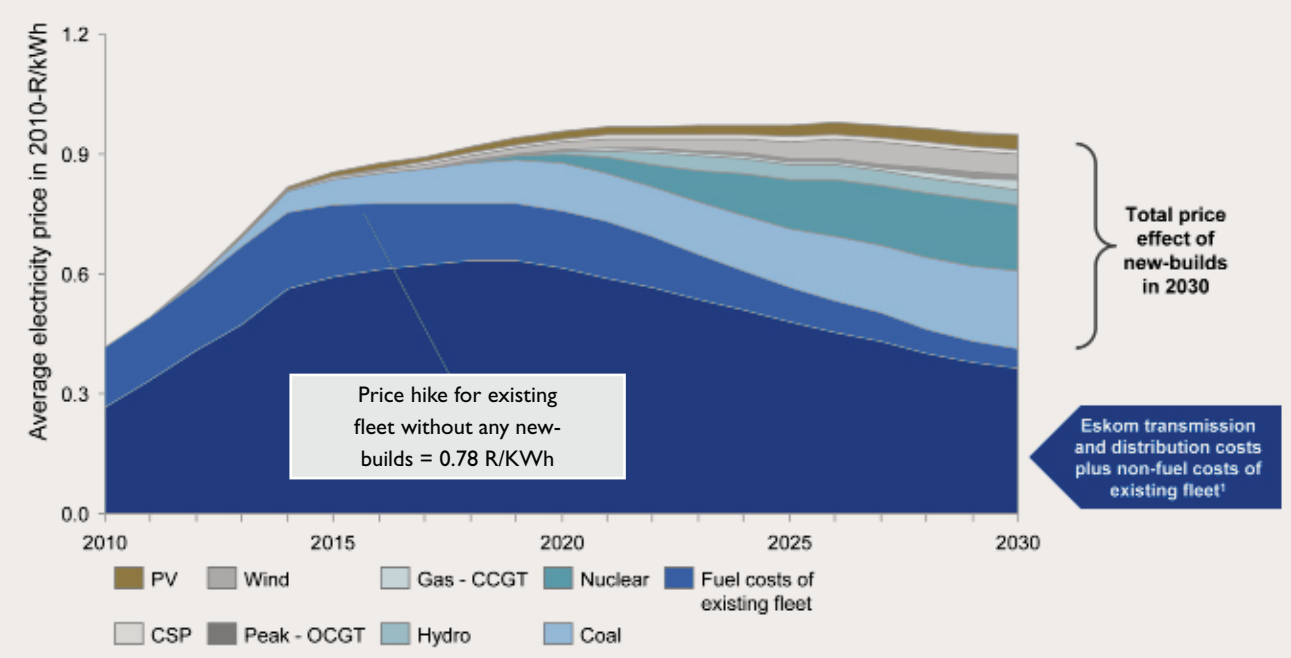
Figure 27: International comparison of industrial electricity prices 2008



Note: Eskom Megaflex, high-demand season, average standard rate; average standard rates for other countries. Exchange USD/ZAR: 8.26 (used in IEA report).
Source: IEA, Eskom Tariff Book, BCG analysis.

As depicted in the Integrated Resource Plan (IRP) report published by NERSA, the 2015 cost-reflective average tariff for the current power fleet amounts to R0.78 per kWh, with an additional increase of R0.08 per kWh justified by the investments in and operation of new power plants. Over the longer term, the IRP shifts the South African investment focus towards reducing the environmental footprint through further efficiency increases and moving towards environmentally friendlier technologies.

Figure 28: International comparison of industrial electricity prices 2008



1. Does not include costs of non-Eskom distribution network. Note: Figures relate to financial years.
Source: IRP.

The Eskom Factor continued

Although the cost-reflective tariffs and the resulting price increases are necessary to ensure the sufficient funding of current and future generation and transmission infrastructure, Eskom acknowledges the negative impact that the price hikes will have on the overall economy.

Increases in the electricity price also contribute to increases in consumer price inflation which is generally countered with higher interest rates which would also negatively affect consumption, production, employment and economic growth.

However, several studies, including Deloitte (2008) found that increasing electricity prices (which dampen demand and incentivise energy-efficiency and demand side management) was a less costly solution to addressing power shortages than load-shedding. The study found that load-shedding had substantial economic impacts across most sectors of the economy and continued at 10% of total power capacity over a year could shave as much as 0.7 percentage points off GDP growth.

Equally, in a report on the impact of price increases and rationing on the South African economy, the HSRC (2008) notes that a lack of electricity was constraining South Africa's ability to benefit from the international commodity boom and could also exacerbate other negative influences such as increasing the country's reliance on substitute energy sources in a time of rising oil prices.

Ultimately tariffs do need to cover the full cost of electricity supply. As long as electricity tariffs in South Africa remain below cost-reflective levels, consumers of electricity are effectively receiving a subsidy either from the taxpayer or from future consumers (if tariffs rise in future). The existence of this implicit subsidy not only distorts the efficiency of the electricity market but promotes a transfer of wealth from the taxpayer and future consumer to the current large consumers.

Mitigating the impact on residential customers is another area of concern for Eskom. Many of the residential customers live close to the poverty line and, as electricity costs represent a significant part of their total monthly expenditures, the price increases may severely impact their standard of living. Therefore, NERSA has directed Eskom to introduce a new residential tariff structure, a progressive pricing scheme which will help to make the price increases as socially acceptable as possible.

The inclined block tariff (IBT) effective since April 2010 works similarly to a progressive income tax scheme. As with the income tax, the price of each additional unit of electricity bought increases in line with overall consumption. The progressive pricing scheme will also work to protect poorer customers, as they generally use less electricity than the wealthier customers. As depicted in the graph below, the low-consumption residential customers (up to 50 kWh per month) will see their overall monthly cost reduced by approximately 14% between 2010 and 2013, while the high-consumption residential customers (up to 1 200 kWh per month) will see electricity price increases of approximately 50% between 2010 and 2013.

Energy efficiency initiatives

Doing more with less, or implementing energy efficiency, is an important lever for Eskom to use to support two major objectives: reducing the rate at which demand for electricity increases and reducing Eskom's negative environmental footprint. Eskom is thus working to increase awareness of what processes or appliances use the most electricity and to assist all customers in reducing wastage and using electricity more efficiently. To this end, Eskom established a division to focus specifically on integrated demand management. Leading by example, much emphasis is placed on improving Eskom's own energy efficiency, in all its operations. Having a presence in most towns of the country, the potential cumulative savings are significant.

As high users of electricity, industry has been a target for the division's communication activities. Eskom, in association with suppliers belonging to the Mining and Industrial Energy Optimisation group, as well as energy services companies in the mining sector, has spent significant time and resources researching and developing technologies and processes that produce the same output but use less electricity, making these available to enable customers to begin reducing demand.

Moreover, Eskom is committed to promoting energy efficiency measures for residential and commercial customers and to raising awareness through energy efficiency campaigns that help customers to identify opportunities to conserve energy.

This is evidenced in the recently launched 49m media campaign that aims to make all South Africans aware of unnecessary electricity consumption in their households or places of work, thus helping them cut their consumption and their electricity bills.

The relatively low cost of electricity in the past has encouraged usage and led to the assumption that supply is unlimited. The 49m campaign's main focus is to remind all South Africans of our power to change our common attitude towards electricity usage. With a budget of approximately R45m (spent within 2011), the 49m campaign offers concrete tips that help South Africans save energy and cut unnecessary power consumption in order to ensure that there is enough energy for all. Importantly, it is about more than a finite number of energy conservation tips – it is about switching all South Africans to a more energy-conscious lifestyle. Knowing that Eskom does not control consumer behaviour, the 49m campaign is also about partnership (doing this together), evidenced by the support given by the government, leading corporations, NGOs and the media.

6. Catalyst for change in South Africa

Corporate governance	Regulation and government policies	Independent power producers	Innovation through Research & Development	Seven pillars of B-BBEE
				
Adhering to three standards of accountability, transparency and responsibility in daily business.	Full support of regulatory bodies and active contribution to the realisation of national and inter-national development goals.	Committed to supporting the government and the regulator in creating the required environment for IPPs to operate in.	Significant R&D investment with focus on new technologies development and demonstration. Projected 20.5% p.a. growth of research budget over next five years.	Solid compliance with B-BBEE policies. Level 2 contribution on B-BBEE compliance. Annual investment of R62m in CSI, mainly related to education and training.
Contributing to South Africa's leading position on anti-corruption performance	Engagement in IRP, COP, NCCC etc.	5 IPPs signed power purchase agreements (totalling 373MW)	R500m invested in R&D in 2011 to improve current operations and investigating future energy options	More than 300 000 beneficiaries (from 254 projects) supported by Eskom Foundation

Note: Figures relate to financial years. *Source: Eskom, BCG analysis.*

● – A green dot indicates that the type of impact is largely positive.
● – A red dot indicates that the type of impact is largely negative.

The Eskom Factor continued

Corporate governance

By promoting strong business ethics within the company, these are transferred to suppliers, customers and employees. Eskom is confident that leading by example will set the pathway for others to follow and build confidence in our country.

As a state-owned company, which is ultimately owned by the people of South Africa, Eskom strives to conduct its affairs in an exemplary manner. In particular, Eskom's ambition is to set and commit to best-practice standards with regard to accountability, transparency and responsibility:

- **Accountability:** As a company whose sole shareholder is the government of South Africa, Eskom is held accountable for achieving certain agreed goals. This is termed the shareholder compact. Included in the compact are defined targets on financial and operational performance, as well as on skills development. Each year, performance is measured against this compact, and Eskom must answer for the results achieved.

- **Transparency:** Eskom was one of the first companies in South Africa to publish an integrated annual report. This means that, in addition to the financial performance of the company, the report includes extensive information on performance with regard to environmental issues, customer service and safety matters, for example. The Eskom factor report is another example of Eskom's efforts to increase transparency on its activities and related impacts.

- **Responsibility:** Understanding that the service that Eskom provides underpins the daily lives of South Africa's citizens, Eskom feels a responsibility to the country beyond the provision of electricity. Eskom therefore actively engages at both a national and international level on a wide variety of topics such as social and environmental issues.

Regulation and government policies

Policy bodies

Through active participation in international bodies such as the World Economic Forum (WEF) and the International Chamber of Commerce (ICC), Eskom is helping to shape the response of the international business community to address sustainability challenges such as development and climate change. Eskom is also an active participant in the focus areas of the WBCSD, Energy and Climate and Development. The WBCSD Measuring Impact framework formed the basis for the Eskom factor methodology. By contributing to this and other WBCSD documents, Eskom influences the development of a more sustainable way of doing business across the globe.

In addition to engaging with international business organisations, Eskom participates in international climate change negotiations. Eskom is a contributing member of the South African delegation to the Conference of the Parties (COP) of the United Nations Framework Convention on Climate Change (UNFCCC), including the most recent negotiations in Durban this December. The conference play a major role in the international agreement on a successor to the Kyoto Protocol. Eskom's role, along with multiple other stakeholders, includes advising the South African government on electricity issues and contributing to official position papers. The main focus of Eskom's activities is to provide information that will inform a balance of measures whilst supporting the economic interest of South Africa and to address the issue of adaptation to climate change impacts and the resultant costs.

Eskom is also a signatory to the UN Global Compact, an agreement with the United Nations to foster the strengthening of human rights, labour rights and environmental and anti-corruption principles. Through this commitment, Eskom reports on its progress on these areas on an annual basis.

Similarly, Eskom has adopted the principles of both the *Montreal Protocol on Substances that Deplete the Ozone Layer and the Stockholm Convention on Persistent Organic Pollutants* and followed up on these commitments to reduce or eliminate negative impacts.

Independent Power Producers (IPPs)

Today, about 95% of the electricity generated in South Africa is produced by Eskom, but it is the intention of the government and the electricity regulator to foster private initiative in the power sector, in particular through the introduction of independent power producers (IPPs). The extent of the task of developing sufficient electricity supply capacity to meet the ever-increasing demand requires additional resources beyond that which Eskom can supply and allows for a measure of competition to enter the historically monopolistic industry.

Eskom is committed to supporting the government and the regulator in creating the required environment for IPPs to operate in. Eskom therefore provides advisory services to IPPs, consulting with them on how to establish their business and how to gain access to financing, for example. Eskom signed agreements with five independent power producers in 2011 to purchase 373MW of additional supply.

Innovation through R&D

Eskom continues to invest heavily in research and development (R&D). Investment in research enables the organisation to more fully understand emerging technologies and their applicability to support new investments.

The research budget of R500m for the 2011 financial year was spent on R&D and demonstration projects to improve operations and secure future energy options. From this year on, Eskom will further increase its focus on R&D, with a planned investment of 0.2% of revenue in R&D. This implies an effective 18% year-on-year growth in R&D investments over the next five years.

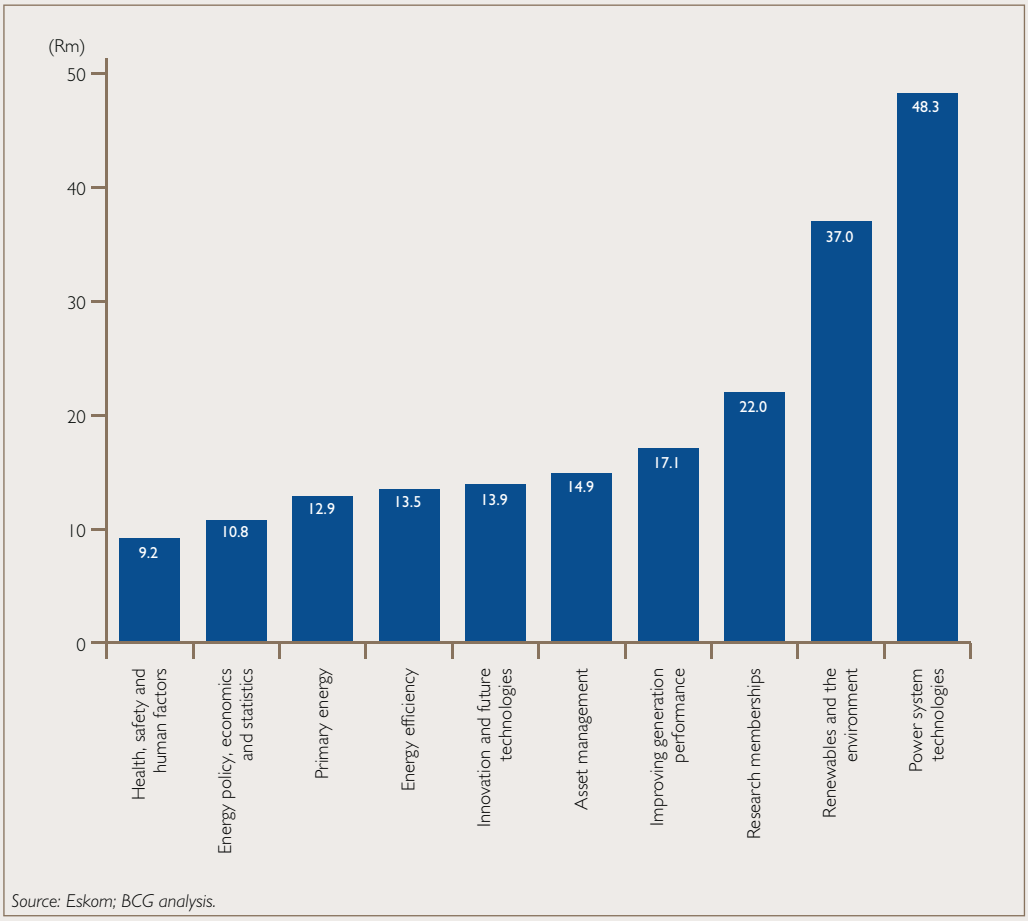
The breakdown of Eskom's R&D investments shows that the largest portion of funds is being invested in research on renewable energy, improving efficiency of production and the reduction of Eskom's impact on the environment.

Eskom is furthermore investing in research on power system technologies and solutions to improve the availability and reliability of transmission, as well as distribution grids, and to implement intelligent networks.

Through these investments, Eskom is one of the major drivers of technological innovation in South Africa. About 20% of all patents granted in South Africa are directly or indirectly related to Eskom's activities, and there is a strong concentration in South African research on Eskom-related subjects. Over 30% of all South African research papers published are on topics that can be linked to Eskom.

Eskom has produced over 120 patents, with at least 16 currently active patents being utilised by other companies.

Figure 29: Composition of Eskom research budget 2011



Source: Eskom; BCG analysis.

As research projects reach higher levels of maturity, it is often necessary to construct a demonstration or pilot plant to take the understanding of the technology to the next level towards commercialisation. Eskom invested more than R306m in such a demonstration programme in the 2011 financial year.

Sefate se tsejwa ka ditholwana. (Sesotho)
A tree is known by its fruit.

Case study: Eskom's current key R&D projects

Plant monitor – an integrated system that allows for comprehensive monitoring, storage and analysis of equipment operational parameters and conditions for the improved ability to recognise, assess and counteract any incipient faults within the monitored plant. (The focus on generators has resulted in the development of a unique monitoring system that includes partial discharge, stray flux, electromagnetic interference, shaft monitoring and fault diagnostic modules combined into the host system.)

UCG – a clean coal technology that permits coal to be gasified directly within the coal seam to produce a synthetic gas (syngas) that can be used as a fuel for power generation. (Eskom will be demonstrating the co-firing of the UCG gas with coal in an existing power station and the use of UCG gas as a fuel for an open-cycle gas turbine demonstration plant.)

Utility load manager – a system that can limit the load available to a residential property on a real-time basis related to the power reductions required to maintain the stability of the electricity network. (This load reduction option provides residents with a choice (which appliances to use when) and encourages energy efficiency.)

Concentrating solar power – a 100MW central receiver demonstration plant with molten salt as the heat transfer and energy storage medium. (The plant will be used to demonstrate a renewable technology with a capacity factor greater than 60%, effective integrated energy storage and network integration as the first step in the development of a solar fleet.)

765kV double circuit tower development – a new 765kV double circuit transmission technology for high-power transfer applications in service-constrained areas. (This technology will allow for the transmission of electricity in large quantities along smaller servitudes compared to the technologies currently applied.)

Case study: R&D at Eskom – Dry cooling technology

Dry cooling technology keeps the cooling water in a separate closed circuit which is cooled through heat transfer rather than evaporation. Thus, the amount of water needed to cool the plant is significantly reduced. As a result, the water usage for cooling of a dry-cooled plant is on average more than 90% lower than that of a wet-cooled plant.

Given the water scarcity that many parts of our country face, Eskom is investing heavily in world-class dry cooling technology and actively driving research and development in this field.

Currently, we are operating both the largest direct dry-cooled and the largest indirect dry-cooled power stations in the world, Matimba and Kendal respectively. Both stations consume about 0.1 litres of water per kWh of electricity produced. In comparison, a traditional wet-cooled plant needs close to 2 litres per kWh.

Seven pillars of B-BBEE

Eskom is currently a Level 2 B-BBEE contributor, scoring 93.56 out of 100.00 points for the 2010 financial year. Eskom is continuously working to improve its score and thus lead by example. Eskom has a strong focus on racial classification of its employees and management in order to ensure promotion of underrepresented groups. Here is how Eskom has performed:

Ownership: As a state-owned company, Eskom belongs to the people of South Africa. Eskom is therefore not rated on this dimension of the B-BBEE scorecard.

Management control: Eskom's black representation at the top management level has increased over the past few years. During the 2010 financial year, close to 50% of the Board, executive directors and top management was black. At the senior management level, Eskom had a representation of 25%.

Employment equity: Being an equal-opportunity employer is very important to Eskom. Currently, over 75% of its employees are black, and approximately 20% of the total workforce are black women. Eskom aims to further increase the employment opportunities for people with disabilities, as they are still underrepresented in the diverse workforce.

Skills development: As outlined throughout this report, Eskom strongly emphasises the importance of employee development. Eskom is continuing training offers that address the development needs of all employees.

Preferential procurement: Through the B-BBEE sourcing initiative (see chapter 4.1), Eskom already distributes 52.4% of total expenditures to B-BBEE-compliant suppliers.

Enterprise development: In the 2010 financial year, Eskom invested 5.7% of net profit after taxes in enterprise development, exceeding the targets set out in the B-BBEE scorecard. One of the initiatives created to support small black-owned businesses is the annual Business Opportunities and Franchise Expo.

Socio-economic development: Eskom carries out CSI programmes through the Eskom Foundation, a Section 21 (not-for-profit) company, wholly funded by Eskom. The activities of the foundation focus on three main areas, namely job creation, skills development and poverty alleviation. The Eskom Foundation supports social and economic projects, and it gives grants and donations to community-based organisations, development agencies and organisations involved in philanthropic work for the development and benefit of the disadvantaged. Grants and donations are also made to small and medium-sized black enterprises. In the 2011 financial year, donations and grants made by the Eskom Foundation added up to R62.3m, which corresponds to 0.53% of pre-tax profit.

With an annual corporate social investment of R62.3m, Eskom ranks among the top seven corporate grant makers in South Africa. Some 300 000 people benefit from Eskom's CSI programmes, a figure that includes people taking part in programmes that are co-sponsored by Eskom, together with other investors or public institutions. While a number of projects take place in regions in which Eskom is active with its business operations, others are geographically unrelated to Eskom's core business.

Case study: Health and HIV at Eskom

Eskom's initiatives to address HIV/AIDS date back to the late 1980s and have since then been continuously expanded and refined.

Eskom cares about their employees and their families. Within Eskom, prevention and awareness campaigns are run constantly and they are working hard to create a discrimination-free environment for HIV-positive colleagues. Eskom has a voluntary counselling and testing (VCT) programme in place. Last year, close to 26 000 employees voluntarily tested for HIV – that is 62% of employees who know their status and can accordingly act responsibly. Eskom contributes to the costs of VCT; support includes psychological support, access to antiretroviral therapy and access to approved clinicians.

Furthermore, Eskom is part of various partnerships relating directly to HIV/AIDS prevention, education, care, research and communication. Among these partnerships is the South African AIDS Vaccine Initiative (SAAVI), which is a presidential lead programme of the South African Medical Research Council (MRC).

Other partners include the South African and the Global Business Coalition on HIV/AIDS, the Global Fund to Fight AIDS, Tuberculosis and Malaria (an international, multi-donor, public-private partnership whose purpose is to dramatically increase available resources to fight three of the world's most devastating diseases) and the World Economic Forum (WEF). The WEF engages leaders in partnerships to shape global, regional and industry agendas. Eskom is one of the committed contributors to the task force of the Global Health Initiative.


REHABILITATION OF BETHAL
INTERNAL STREETS


NMF
NMF
ABNORMAL

Stakeholder Engagement

"Create a shared understanding of business impacts and societal needs."

Stakeholder Engagement

Introduction

The Eskom factor is intended to be a thorough assessment of Eskom's impact during the 2011 financial year on the economy, our society and the environment, not only in a direct sense but also through Eskom's immediate suppliers and business partners. Ultimately, Eskom wants to change gear to achieve higher performance to further increase its positive impact on South Africa while reducing the negative environmental burden.

The WBCSD methodology used to develop this impact assessment encourages stakeholder engagement through open dialogue. This is to create a shared understanding of business impacts and societal needs and to explore what can and cannot be done by Eskom to address these needs.

The stakeholder engagement process so far

A number of different approaches have been taken to engaging stakeholders in a dialogue. Firstly, it was decided to initiate the conversation only when the draft assessment was made available. This allowed the internal project team to marshal their thinking, given that it was the first time that the WBCSD methodology was being applied by Eskom. It also provided a scope to guide the conversation. More open-ended approaches have also been suggested by several stakeholders and may be pursued more extensively in future.

Once Eskom developed the initial impact assessment, a draft report was used as the basis of engagement with a selection of both internal and external stakeholders. Letters were sent directly to stakeholders who were anticipated to have an immediate interest in this report and, where possible, relevant forums were targeted for one-on-one engagements. These and other key stakeholders were also encouraged to comment on the online version of the report, including through answering a questionnaire.

Stakeholder Engagement continued

The one-on-one engagements involved delivering a presentation on the Eskom Factor Heat Map, summarising Eskom's impacts as presented on page 87 of this report. An open discussion followed to understand the stakeholders view on the impacts presented. Eskom has addressed a range of stakeholders in this manner, from financing institutions, major suppliers and customers to non-governmental organisations and employees.

Unfortunately certain stakeholder groups could not be reached despite continuous efforts. However, Eskom remains open to receiving constructive comments on this initiative.

Stakeholders on Eskom's database were sent an email introducing the report and heat map and to encourage participation in the online questionnaire (Annexure 2). Eskom also used the standing forums, of which it is a member, to introduce the report and request stakeholder inputs online. At the regional levels, the platform of regional engagements with stakeholders was used to introduce the report and also encourage online participation.

Stakeholder feedback

All relevant comments resulting from the above engagements, including the results of the questionnaire, were analysed and grouped into common issues.

With respect to the online questionnaire, on the whole there was a lot of support for Eskom's messages, especially in the areas of Eskom's impact on GDP, direct and indirect job creation, the six key messages, electricity being an important driver of regional cooperation and Eskom's water efficiency programmes. Majority stakeholders also stated that they found the report useful.

However, the questionnaire provided an indication that Eskom needs to bolster public awareness, particularly aspects around the WBCSD Impact Measurement Framework and Eskom's relocation, IPP and B-BBEE processes and achievements.

Several respondents expressed disagreement that consumers were aware of how to reduce their electricity consumption. A general consensus is that Eskom, with the assistance of the government, should invest in educating South African communities on how they can reduce the use of electricity.

Furthermore, some disagreement was expressed with respect to the adequacy of Eskom's carbon reduction aspirations and research investment. Many respondents also stated that as a state-owned company, the government should bridge Eskom's funding gap rather than approving tariff increases.

These issues, as well as the feedback received from the one-on-one engagements, are summarised in the stakeholder feedback table below:

Figure 30: Summary of stakeholder engagement comments and responses

Stakeholder group	Impact area	Stakeholder feedback	Eskom's response	Section reference
Economic				
Financing institutions and customers	Constraint on economy	Eskom's impact on economic growth constraints resulting from current lack of electrical supply capacity	Information on the impacts of undersupply has been included in the final report.	Economic growth engine
Financing institutions	Exports	Eskom's supply to SADC regions	The intention with this first assessment report was to include the impact in respect of South African activities, with a view to expand the scope of the assessment in future years. However, some further information has been included in the final report.	Economic growth engine

Stakeholder group	Impact area	Stakeholder feedback	Eskom's response	Section reference
Environmental				
Financing institutions and NGOs	Supplier impacts	No analysis of the negative environmental and social impacts of suppliers	Eskom is aware that some suppliers have significant (positive and negative) environmental and social impacts. In an attempt to quantify those impacts, it has become evident that there is a lack of relevant publically available data; or the data is reported at a group level from which it is not possible to disaggregate those impacts attributable to operations undertaken to provide goods and services to Eskom. The report provides a qualitative assessment of these impacts. Improving the robustness of this aspect of the methodology in future will require in-depth engagements with suppliers.	Environmental footprint
Financing institutions	Waste	No mention of Eskom's waste measurement and management programmes	Eskom has provided additional information on waste in the final report.	Environmental footprint
NGOs	Climate change	How the relative carbon reduction is to be achieved	As detailed in the final report, the potential reduction in relative CO_2 has been derived on the basis of future scenarios including an increase in the share of nuclear and renewables in Eskom's generating mix (subject to allocations under the IRP), as well as further investigating clean coal technologies and accelerating efforts in energy efficiency.	Environmental footprint
Employees	Energy efficiency	Eskom's internal energy efficiency programme	Further information on Eskom's internal energy efficiency programme is detailed in the final report as well as Eskom's 2011 annual integrated report.	Environmental footprint

Stakeholder Engagement continued

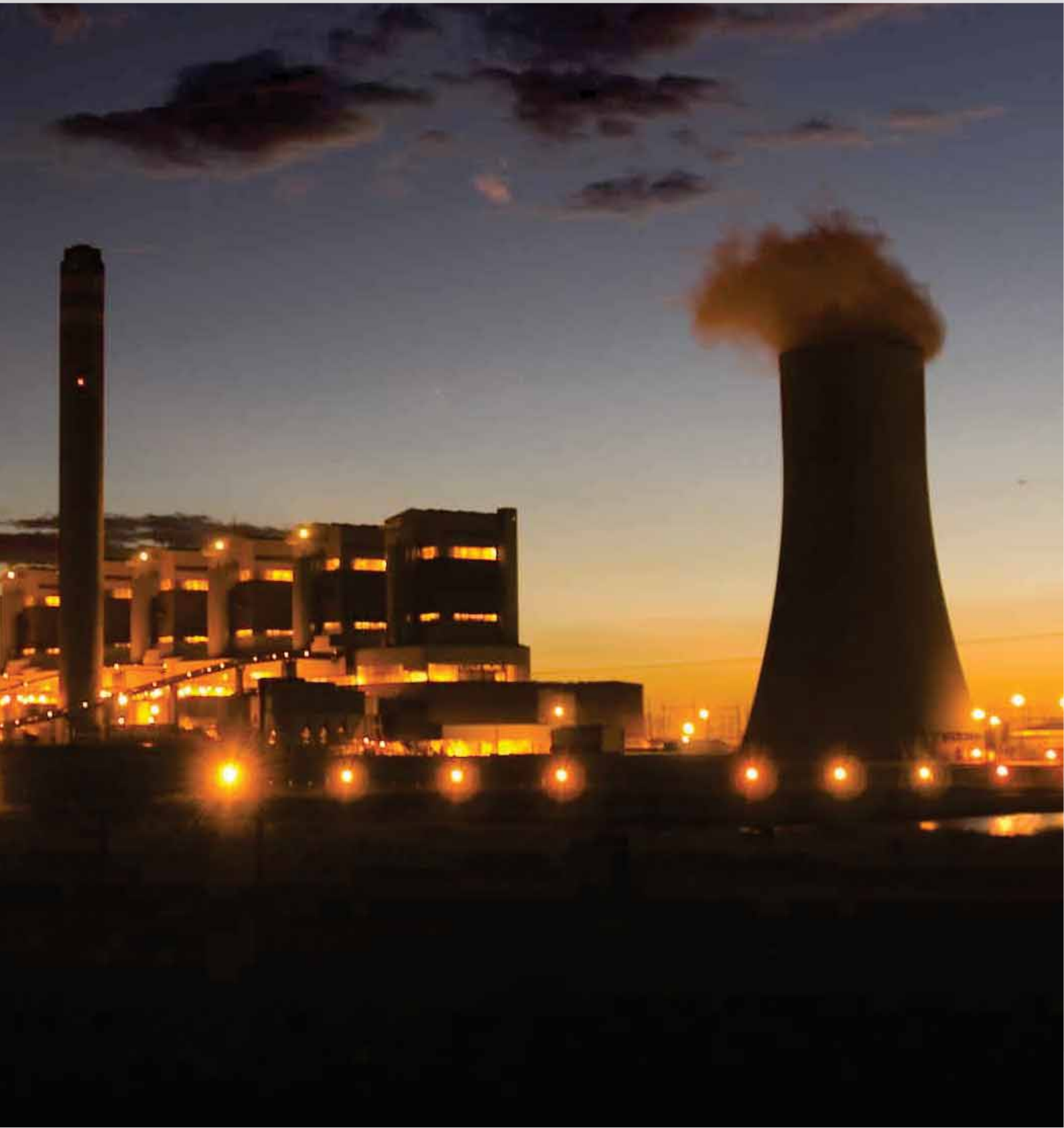
Stakeholder group	Impact area	Stakeholder feedback	Eskom's response	Section reference
Social				
Customers and employees	Public safety	Eskom's role in encouraging public safety and discouraging illegal connections	Further information on Eskom's awareness-raising programmes is detailed in the final report.	Catalyst for change
Customers and NGOs	Energy efficiency	Eskom's education and awareness-raising programmes for energy efficient practices by consumers	Further information on Eskom's awareness-raising programmes is detailed in the final report.	Environmental footprint
Employees	Skills development	Eskom's role in bridging the skills gap in South Africa	Further information on Eskom's skills programmes, including partnerships with universities and schools, is provided in the final report.	Employer, job creator

This first version of the Eskom factor report is just the beginning of the journey. A process to review the benefits of the factor report to stakeholders and to Eskom is to be undertaken. Future iterations will be dependent on the feedback received from stakeholders. Eskom therefore encourages and welcomes stakeholders' views on the current assessment of Eskom's footprint and the areas of impact.


water heating costs
When the heat is on, heat pumps save the day

Conclusion

"Eskom is fully committed to continuing its support for the government's five-year priorities."



Conclusion

Beyond increasing transparency on Eskom's footprint, Eskom's ultimate objective lies in further increasing its positive impacts while actively reducing the negative ones. Eskom is therefore defining initiatives to address these objectives as part of the company's overall organisational strategy.

Eskom recently defined *eight strategic objectives*, in coordination with the electricity regulator and shareholder, through which Eskom is addressing the findings of the Eskom factor project into our operational imperatives. These strategic objectives will allow Eskom to improve its footprint in several areas and to address the following five key areas in particular:

- Availability and reliability of supply
- Efficient use of electricity
- Environmental footprint
- Electrification
- Health and safety.

Moreover, Eskom is fully committed to support the government's five-year priorities of improving education, promoting healthcare, creating decent work, fighting crime and corruption and fostering rural development and land reform.

To further delve into the detail of Eskom's impact on South Africa and to enable a further improvement of its positive footprint in South Africa, Eskom seeks to actively engage with its stakeholders to capture their opinion on, and listen to their views about, Eskom's future strategy.

Since 2010, Eskom has embarked on a journey to review its strategic direction, achieve strategic shifts in performance and actively support the further growth of South Africa while mitigating any negative impacts on the environment.

Based on Eskom's mandate as defined in the shareholder compact, Eskom's vision, values and strategic imperatives were thoroughly revised to reflect the current national and global realities. The review resulted in the following eight strategic objectives that outline Eskom's strategic direction and will guide Eskom in terms of current and foreseeable challenges.

Conclusion continued

Eskom's eight strategic objectives

While the stated objectives will allow Eskom to improve its economic, social and environmental footprint in several areas, the following sources of impact are seen as the key areas of future improvement of Eskom's footprint:

- **Availability and reliability of supply:** Eskom has been able to eliminate load-shedding 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 6 TWh, through tight operational controls and support further economic growth in South Africa.

- **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.

- **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.

- **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.

- **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.

Furthermore, Eskom is fully committed to continuing its support for the government's five-year priorities.

Annexure 1

Using the four-step methodology to understand the impact of the Medupi power plant more fully

Throughout the development of the Eskom factor methodology, it has been tested against one of the new-build projects, the Medupi power station. In assessing the impact of the Medupi project, four steps of the Eskom Factor methodology were followed, i.e. (1) setting the boundaries, (2) measuring the impact, (3) developing understanding and (4) planning for action.

1. Setting the boundaries

The aim of the three new-build projects, of which Medupi is one, is to increase electricity generation capacities to guarantee a stable and sufficient electricity supply for South Africa in the future. Medupi will be the world's fourth-largest coal-fired power plant, with an installed maximum capacity of 4 764MW. Currently, the largest power station in South Africa is Kendal with a maximum capacity of 4 116MW.

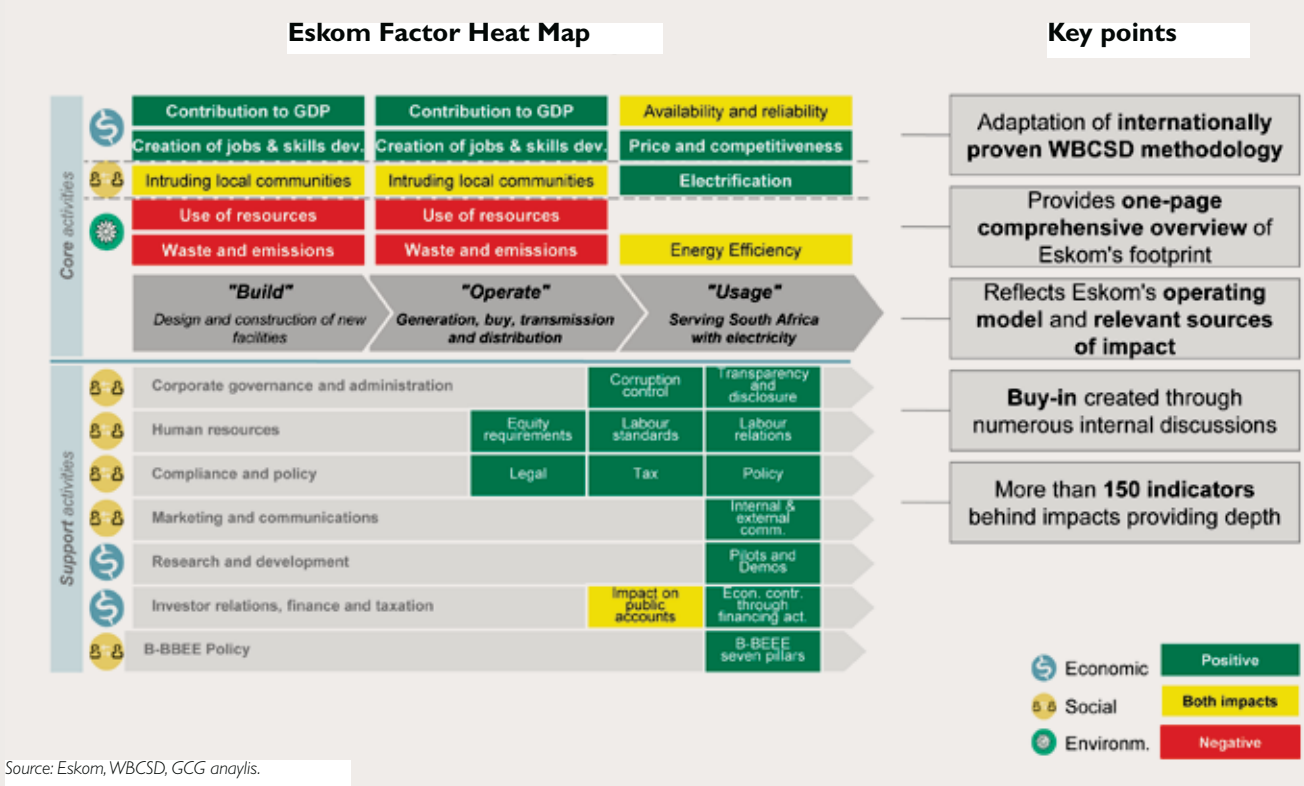
Due to the size of this project, Medupi is having an enormous impact on South Africa. For this reason, not only was Medupi's local impact on the Lephalale city and the surrounding Limpopo province assessed, but also the project's footprint in South Africa as a whole.

Another aspect of the assessment is the development context against which Medupi's impact is measured. Lephalale faces two key issues, namely poverty and low levels of education. The assessment of the project's impact focused on the direct development issues of the region, taking into account not only the activities related to the construction of the power plant but including building supporting infrastructure and operating the plant for its lifetime after its construction.

2. Measuring the impact

Following the procedure of filtering all relevant sources of impact into separate indicators, over 100 key performance indicators (KPIs) for the Medupi case were identified and measured, excluding the indicators that are relevant for Eskom as a whole, but of less significance when looking only at the Medupi project. These KPIs form the basis of this assessment of the Medupi project and its impact.

Figure 31: Eskom Factor Heat Map for Medupi



Source: Eskom, WBCSD, GCG anaylis.

The key findings of the assessment are summarised in a Heat Map structured similarly to that of Eskom but which is very specific to the Medupi project in its underlying data.
Overall, the Medupi Heat Map results are very similar to those of Eskom as a whole: Medupi has a strong positive contribution to GDP during the construction phase but will release environmentally harmful emissions during operation. However, on balance Medupi will address one of the major challenges that the country faces by contributing to a stable and sufficient supply of electricity for decades to come.

3. Developing understanding

To develop an understanding of the full Medupi impact, it is necessary to relate the project's footprint to the actual issues to be addressed. This entails identifying the most relevant impacts, given the development context, as well as intensive engagement with stakeholders.

All of the project's impacts are summarised and quantified through measurement of the most important indicators to combine them into the following key messages about what Medupi means to Lephalale, Limpopo and South Africa:

1. As with Eskom's other power stations, Medupi is an economic growth engine. Throughout the construction phase, the project will contribute almost half a per cent to the GDP of South Africa for each of the eight years of construction when considering direct, indirect and induced economic impacts. The marked economic impact is made possible through focused localisation efforts, having realised a localisation rate of 64% through this effort. Instead of importing the parts and equipment required, Eskom assisted new businesses and even whole industries to establish in South Africa – businesses that will continue to produce and employ long after completion of the construction project as they service similar needs in the economy.
2. Medupi also has very noticeable local impacts, both positive and negative. On the one hand, the project makes a positive contribution by allowing more than 5 000 people from Lephalale and the surrounding area to secure employment and more than 2 000 of them to substantially expand their skills through training. On the other hand, the negative impacts on local communities are the increased pressure on local facilities through the large influx of workers, the induced shortage of housing and the resultant increase in prices of accommodation.

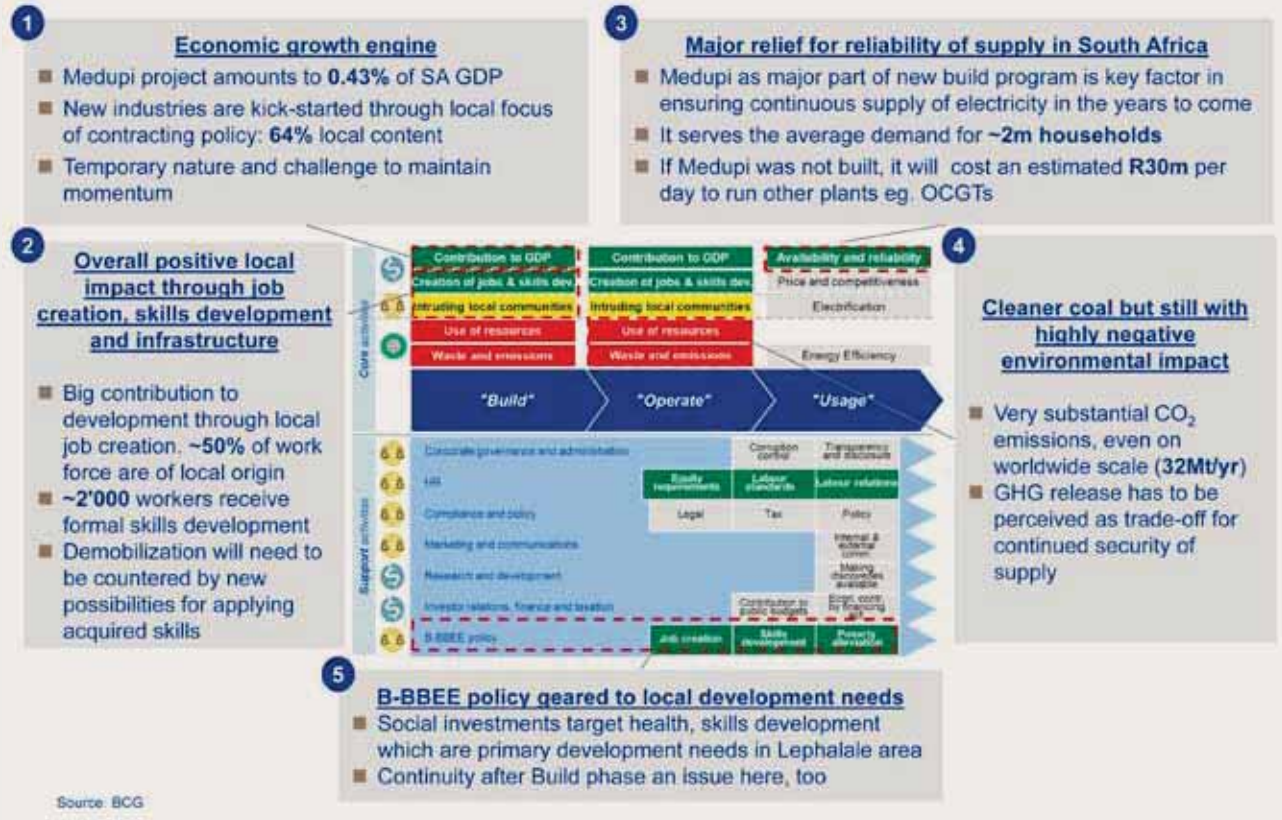
3. Once commissioned and online, Medupi will provide much-needed electricity supply capacity in South Africa to support the existing fleet of stations in meeting the growing demand for electricity. As a long lead project, taking many years to plan, design and construct, there is no viable alternative for supply, other than building Medupi.

4. Running Medupi will have a negative contribution to CO_2 emissions and therefore climate change, with around 32Mt of CO_2 likely to be emitted per year. This means that Eskom will raise the country's overall emissions by around 7%, a figure that already includes the positive impact from using efficient technologies in the plant design to reduce emissions.

While several of Medupi's positive impacts arise during construction, some of these will not continue in the operational phase. Construction workers in particular are at risk of being demobilised, or having to move away from the community in order to find further employment, unless further developments take place in the area.

Akukho qili linokuzikhoth' emhlana. (Xhosa)
Nobody can do everything by themselves.

Figure 32: Summary of the Medupi "deep dive"



4. Planning for action

The ultimate objective of the Eskom factor footprint assessment is to contribute to decision-making. Although large CO_2 emissions from Medupi cannot be avoided, given the nature of the power plant, Eskom has implemented a variety of other responsive measures to reduce this impact.

One of these measures, the introduction of Super Critical Steam conditions, allows Eskom to use coal more efficiently than before. Another example is the commissioning of air-cooled condensers instead of traditional wet cooling, which will decrease the amount of water needed for cooling by 90%.

Likewise, to counter the temporary nature of construction work, Eskom is aiming to equip workers with skills they can leverage for future employment.

To further improve Eskom's footprint assessment of Medupi, its areas of impacts and the direction of impact, Eskom is progressing an extensive stakeholder engagement process to enable Eskom to take decisions that prolong the positive impacts, mitigate the negative ones and identify further actions that can be taken to improve Eskom's overall footprint.

Annexure 2

On-line Questionnaire Analysis

It is disappointing that over the two month consultation period, only 33 responses were received. Respondents were asked 27 questions and given the option to agree, disagree, respond that they didn't know or to skip the question. The questions highlighted a selection of key messages from the text including Eskom's calculated impact on GDP; aspects around employment practices; safety and environmental impacts; tariffs and corporate governance. The below table provides an analysis of the feedback received.

Questions	Agree	Don't agree	Don't know	No answer
Eskom has estimated that its direct economic impact on the South African economy is about 3% of the total South African GDP. Do you believe that Eskom substantially contributes to South Africa's GDP?	91%	0%	9%	0%
Eskom provides direct and indirect employment to over 129 000 people, and, when considering family members, sustains over 516 000 South Africans. Do you agree with this statement?	85%	3%	12%	0%
Eskom and the contracting companies on its new build sites employ most of their workers from the local communities. Do you agree that this is a fair recruitment practice?	67%	6%	18%	9%
Eskom is transparent and accurate in its disclosure of its carbon footprint, and is committed to improving the efficiency of its current and future power plants. Do you agree with this statement?	73%	6%	18%	3%
Energy-intensive industries are likely to cut back on production as a result of future price increases set by the National Energy Regulator of South Africa, and this could result in an estimated loss of around 16 000 jobs. Do you agree that electricity price increases should be countered with efficiency programmes to minimise these job losses?	85%	0%	12%	3%
Eskom is committed to good corporate governance, anti-corruption practices, addressing health and safety issues, and the development of new and better technologies. It is also a committed corporate citizen. Do you agree with this description of Eskom?	67%	12%	12%	9%
The findings of the Eskom Factor report is that Eskom plays six key influencing roles in South Africa: as an economic growth engine; as an employer, job creator, and skills developer; through its impact on local communities; through its environmental footprint; as an enabler of development through electricity provision; and as a catalyst for change in South Africa. Do you agree that these areas have been identified correctly? Please click disagree if there are other areas you feel should be included.	91%	3%	6%	0%
We have identified four challenges in South Africa where Eskom can make a difference: electrification; provision of a reliable source of electricity; unemployment; and, climate change. Do you agree that these have been correctly identified? Please click disagree if there are other areas you feel should be included.	79%	15%	0%	6%
Eskom adopted the WBCSD framework to give a precise account of Eskom's footprint in South Africa. Do you agree that this framework is able to give the best account of Eskom's footprint?	55%	9%	33%	3%
Eskom's full indirect and induced benefits by applying the South African GDP multiplier to Eskom's direct impact is an influence of close to 8% of the GDP. Do you believe that Eskom has a substantial impact on South Africa's GDP?	94%	0%	3%	3%
Eskom has an important role to play in the provision of electricity to countries in the SADC region, as well as the importing of electricity generated outside of our borders. Do you agree that electricity is an important driver of regional co-operation?	85%	0%	6%	6%
Eskom estimates that it is indirectly responsible for an estimated 32 000 jobs at coal mining companies. Do you agree that it is reasonable for Eskom to claim responsibility for this indirect job creation due to its procurement levels?	76%	12%	9%	3%
In producing this draft Eskom Factor report the negative impacts of the industries that rely on Eskom for orders have not yet been included. Do you agree that this is an important gap that should be addressed in final or future reports?	76%	3%	18%	3%
Formal and informal training have been provided to the unskilled and semi-skilled labourers at Eskom's new-build projects. Do you agree that this will improve their chances of finding new jobs after the completion of the three new power plants?	76%	9%	12%	3%

Annexure 2 continued

Questions	Agree	Don't agree	Don't know	No answer
Do you agree that Eskom does its best to mitigate the impact for people affected by relocation and that Eskom conducts the process in a sensitive manner?	61%	9%	27%	3%
Eskom currently uses about 1.35 litres of water to generate each kilo-watt hour of electricity and is responsible for around 2% of the annual consumption of South African fresh water supply. The use of dry-cooling technology at Medupi and Kusile will reduce per kilo-watt hour consumption at these power stations by as much as 90%. Do you agree that Eskom is actively improving its water efficiency?	82%	3%	9%	6%
Eskom has set the target of reducing its relative carbon emissions by about 30% (from 0.98 to 0.68kg per CO_2kWh) by 2030. Do you agree that this is an sufficient target given that total emissions will still increase in the short to medium term?	52%	27%	15%	6%
Do you agree that electricity underpins GDP growth, especially in the South African economy?	85%	0%	12%	3%
Do you agree that electricity tariffs should be cost reflective and Eskom, not the South African government, should fund its current and future generation?	76%	15%	3%	6%
Do you agree that South Africans are aware of their electricity consumption and how they can reduce their electricity bills?	48%	39%	6%	6%
Eskom signed agreements with five independent power producers in 2011 to purchase 373MW of additional supply. Do you agree that this is a good indication that Eskom is supporting the introduction of Independent Power Producers?	52%	14%	21%	14%
Eskom takes public safety seriously. It currently includes public fatalities and accidents related to its operations when calculating Eskom's footprint. Do you agree that public incidents should be factored in the overall measurement of Eskom's footprint?	79%	9%	3%	9%
Eskom invested (R500 million) or 0.005% of its total revenue in research and development during the current year. It plans to increase this to reach an investment of 0.2% in the future. Do you agree that this is an adequate improvement in investment?	55%	18%	18%	9%
Eskom is a level-2 B-BBEE contributor. Do you agree that Eskom has made great strides in transformation to support the principles of B-BBEE?	58%	15%	24%	3%
A key objective of the Eskom Factor report is to determine Eskom's economic, social and environmental footprint in a transparent manner. Do you agree that the Eskom Factor document is an accurate and transparent reflection of Eskom's impact in South Africa?	67%	9%	18%	6%
Did you find the information in the Eskom Factor useful?	82%	18%	0%	0%
Thank you for participating. Your input is appreciated. Please indicate if we can follow-up with you to discuss your input and/or invite you to participate in further reviews of the Eskom Factor.	73%	24%	0%	3%

While the majority of the feedback is in agreement with the content in the Eskom factor, it is also important to understand those areas where there were lower levels of agreement and whether this is due to a lack of information or real disagreement. This has been unpacked in the section on Stakeholder Engagement.

Glossary

B-BBEE: Broad-Based Black Economic Empowerment; an empowerment initiative launched by the South African government; successor of the narrower Black Economic Empowerment initiative; contains seven pillars which determine the level of contribution of a company towards B-BBEE standards

BWO: Black-women-owned enterprises; part of the B-BBEE initiative

Cloud: This includes all activities within the Eskom group and the communities within which Eskom operates (including its suppliers and customers)

CO_2 intensity: Refers to the amount of carbon dioxide per unit produced; this indicator can vary depending on the electricity generation mix

CO_2: Carbon dioxide, a greenhouse gas produced through the burning of coal and other fossil fuels

COP 17: The 17th Conference of the Parties of the United Nations Framework Convention on Climate Change. The Conference of Parties is held on an annual basis and at which current problems and solutions for climate change are discussed by all participating members

CSI: Corporate social investment; these investments focus on establishing and developing the social infrastructure of South Africa and thus on contributing to the wellbeing and advancement of communities throughout South Africa

Distribution: The Distribution unit covers the final part in Eskom's energy supply chain; the local transmission of electricity from the smaller sub-stations to the end customer

Dry cooling: Dry cooling technology keeps the cooling water in a separate closed circuit which is cooled through heat transfer rather than evaporation. Thus, the amount of water needed to cool the plant is significantly reduced. As a result, the water usage for cooling of a dry-cooled plant is approximately 90% lower than that of a wet-cooled plant

Economic value added: Economic value directly created by a company in an economy, corresponding to the portion of revenues that remain after deducting all operating expenses

Energy efficiency: Programmes to reduce energy used by specific end-use devices and systems, typically without affecting the services provided

EWT: The Endangered Wildlife Trust is a trust dedicated to conserving wildlife and endangered species in southern Africa in order to preserve the fauna of Africa

Factor: The multiplier effect of an impact obtained through business activities

FET: Further Education & Training programme

FTE: Full time equivalent employment

FGD: Flue-gas desulphurisation is a process to remove sulphur dioxide from flue gases resulting from burning coal by using a chemical process to wash out the molecules

GDP: Gross domestic product; this indicator is a measure of the value of all goods and services produced within a country during a year. It serves as an indicator for the wellbeing of a nation, whereby it is usually used in GDP per capita in order to express the value per person, making it a comparable measure

Generation mix: An expression of the technology and primary fuel used to produce electricity of a country or electricity provider

Generation: The generating unit of Eskom, responsible for electricity production in power stations

Heat Map: A two-dimensional, graphical representation of data where two indicators are plotted against each other in order to assess their joint impact, visibility and comprehension

IAEA: International Atomic Energy Agency; an international agency dedicated to monitoring and recording peaceful nuclear activities of participating members

IBT: Inclining block tariffs; a pricing structure recently introduced into Eskom's electricity pricing scheme, whereby the level of the tariff depends on the amount of electricity consumed

Glossary continued

IPP: Any entity not owned by the government that owns or operates, in whole or in part, one or more independent power production facilities

IRP: Integrated Resource Plan for Electricity, is the long-term electricity capacity plan which defines the need for new generation and transmission capacity for South Africa

KPI: Key performance indicator; evaluates success of a company regarding a specific key figure and indicator

kWh/MWh/TWh: Kilowatt, megawatt, and terawatt hours are measures for quantifying units of electricity production or consumption; the measure of electricity, watt, is multiplied with time in order to get a quantifiable measure for the use of electricity over time; usually used to calculate the cost of electricity since the measure of time is necessary to get the amount of total electricity used

Load shedding: To avoid total blackouts in the supply area, a scheduled and controlled set of power cuts, rotating available electricity supply capacity between all customers when demand is greater than supply

Mt: Mega tons; one million tons

MW: Megawatt; one million watts

New-build programmes: Medupi, Kusile and Ingula, commonly referred to as the "new-builds" since these power plants are the newest of their kind and are still under construction

NERSA: National Energy Regulator of South Africa

NGO: Non-governmental organisation

NGP: New Growth Path; a government programme to support the development and growth of the South African economy, whereby R464.8m will be spent to create new jobs; the main goal is to reduce unemployment from 25% to 10%

NO_x: Nitrogen oxide, an air pollutant produced as a by-product of the burning of coal and other fossil fuels

Primary energy: Energy embodied in natural resources (e.g. coal, crude oil, sunlight, wind and uranium)

Pumped-storage: A pumped-storage scheme consists of a lower and an upper reservoir with a power station/pumping plant between the two. During off-peak periods, the pump use electricity to pump water from the lower to the upper reservoir. During peak demand, water is allowed to run back into the lower reservoir through the turbines thereby generating electricity

SADC: Southern African Development Community; SADC countries include Angola, Botswana, the Republic of the Congo, Lesotho, Malawi, Mauritius, Mozambique, Namibia, Zambia, Zimbabwe, South Africa, the Seychelles and Swaziland

SO_2: Sulphur dioxide, an air pollutant produced as a by-product of the burning of coal and other fossil fuels

Stakeholder: Person, group, party and/or organisation who has an effect on, or is affected by, an organisation

Super Critical Steam: Steam obtained from steam generators that operate above the critical point of water, having no distinct separation between gas and liquid

Transmission: Eskom's Transmission unit is responsible for the high-voltage power grid, which sources electricity directly from the generating power plants to the larger sub-stations

UNFCCC: United Nations Framework Convention on Climate Change; the international climate change treaty created at the climate change summit in Rio de Janeiro 1992

WBCSD: World Business Council for Sustainable Development; an organisation created by corporations that focuses primarily on the issue of sustainability and sustainable development of corporations and tries to bring sustainability closer to corporations by emphasising not only environmental and social sustainability but also the economic sustainability of measures

WEF: World Economic Forum; a forum that is held on an annual basis in Davos, Switzerland, and is a meeting place for policy makers and business leaders to discuss a range of emerging topics

References

Overview of external studies used for the analyses in the Eskom Factor report:

1. BP, *BP Statistical Review of World Energy, 2010*
2. Deloitte, 2012. *The Economic Impact of Electricity Price Increases on Various Sectors of the South African Economy – A consolidated view based on the findings of existing research. Johannesburg*
3. Department of Mineral Resources, *Minerals Statistical Tables, 2008*
4. Deutsche Securities, 2010. *Eskom – The "shocking" truth.*
5. Frost & Sullivan, 2011. *IRP 2010: A Frost and Sullivan Impact Analysis*
6. HSRC, 2008. *The Impact of Electricity Price Increases and Rationing on the South African Economy*
7. IEA, *Energy Prices and Taxes – Quarterly Statistics Q4, 2010*
8. IEA, *World Energy Outlook, 2010*
9. National Energy Technology Laboratory, *Coal Power Plant Database, 2007*
10. OECD, *Promoting SMEs for Development, 2004*
11. Pan-African Investment and Research Services, *The Impact of Electricity Price Increases and Eskom's Six-Year Capital Investment Programme on the South African Economy, 2011*
12. PB Power, *Estimates the cost to the economy of electricity outages, September 2008*
13. Quantec (Pty) Ltd, 2011. *Eskom economic footprint 2010/11*
14. Statistics South Africa, *Communities Survey, 2007*
15. Statistics South Africa, *Labour Force Survey, 2010*
16. Transparency International, *Corruption Perceptions Index, 2010*
17. Vedavalli, R, 1989. *Domestic Energy Pricing Policies. World Bank*
18. World Bank, *The Welfare Impact of Rural Electrification, 2008*
19. World Business Council for Sustainable Development, *Measuring Impact Framework, 2008*
20. World Business Council for Sustainable Development, *Vision 2050, 2010*
21. World Health Organisation, *The Energy Access Situation in Developing Countries, 2009*

Disclaimer

This report is based on the Measuring Impact Framework developed by the WBCSD which has been applied to Eskom's specific context.

The analyses and statements of fact published in this report are based on Eskom's external and internal data sources. The public sources used are believed to be reliable, but no guarantee is made that such information is accurate or complete. A significant share of internal data used for this report is also reflected in Eskom's annual report for the 2011 financial year. In this case, the data has been officially audited and approved by an external, certified auditor. All other Eskom-internal information has been validated by its Internal Assurance and Forensic department but has not been audited by an independent source.

All estimates and opinions included in this report constitute our judgements as of the date of this report. However, no guarantees for correctness and/or completeness can be given, and Eskom does not accept any liability for possible damages resulting from usage of the data in this report.

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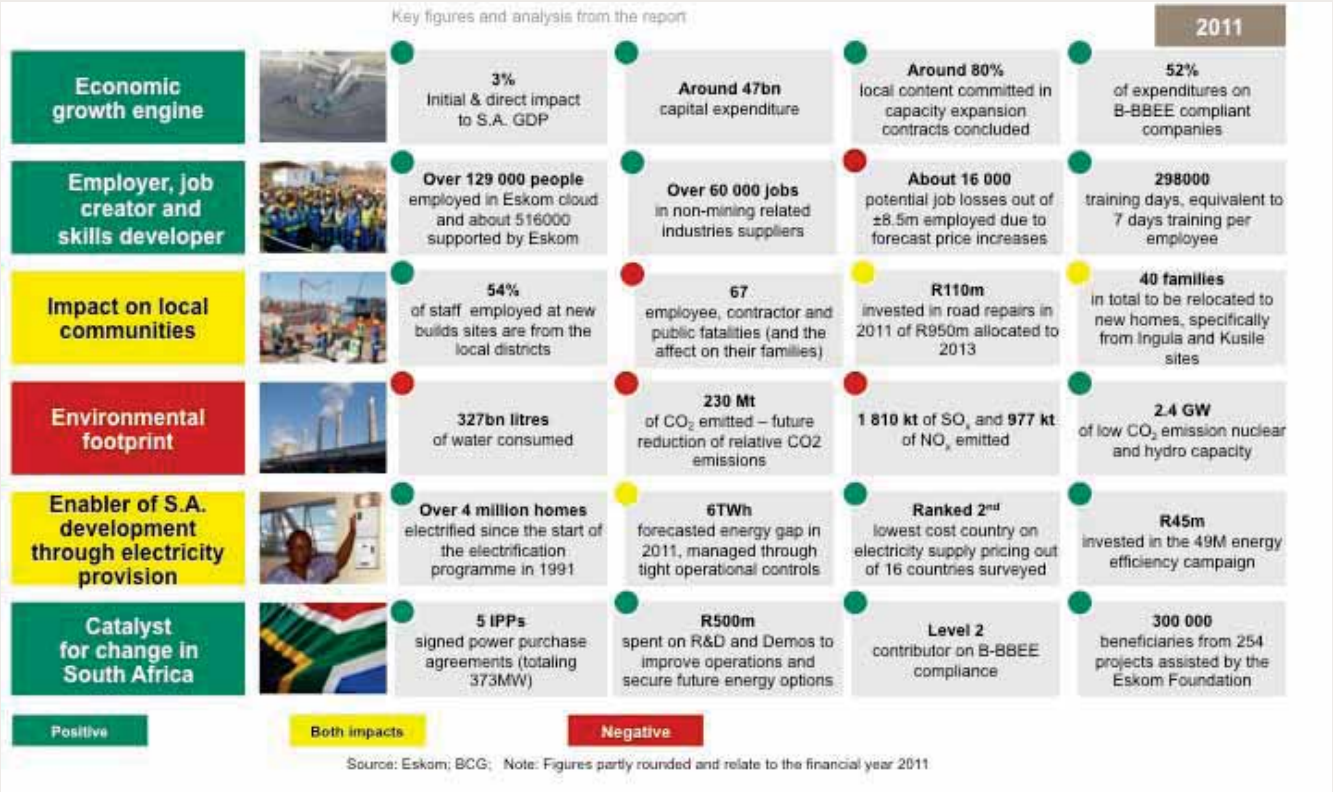
Figure 33: Overview of key indicator values included in the Eskom Factor



i *Deloitte calculations based on Statistics South Africa estimates for GDP generated by the electricity and gas industry.*

ii *Quantec publishes a South African Social Accounting Matrix (SAM) on an annual basis. The 2010 SAM was published during November 2011. This SAM was used to explain the footprint of Eskom's economic activity in South Africa after modification with Eskom specific financial and employment data.*