

Overview and assessment of the energy efficiency and energy conservation policies and initiatives of the Republic of South Africa

Theo Covary
Unlimited Energy
8 Tyrwhitt Avenue
Rosebank, 2196
Johannesburg
South Africa
theo@unlimitedenergy.co.za

Dr Ulrich Aversch
Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ)
333 Grosvenor Street
Hatfield Gardens, Block C
Pretoria
South Africa
ulrich.aversch@giz.de

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Abstract

South Africa experienced rolling electricity blackouts in 2008. Since that time the National Energy Efficiency Strategy (NEES) has been revised to accelerate the development of energy efficiency policies and to make their implementation effective.

The NEES consists of a mixture of regulatory measures, financial incentives, demonstration programmes and awareness campaigns and voluntary agreements. The NEES sets voluntary targets for key sectors, however to date apart from a handful of programmes the implementation and uptake of energy efficiency (EE) measures has not come close to meeting the original targets. The commercial and industrial sectors have expressed that there is a lack of a cohesive programme which is underpinned by unambiguous policy and regulations.

The Department of Energy (DOE) in South Africa and South African National Energy Institute (SANEDI) funded by German Cooperation implemented by Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), analysed the current energy policy in South Africa and their interaction with other policies. The objective was to consolidate all these onto one document allowing all stakeholders to have a consolidated view of what is in place, what is being proposed which will give them the opportunity to participate in a more meaningful manner.

The paper presents the methodology used to assess the status of current policies in South Africa. It includes the review and evaluation of all Government commitments pertaining to EE including the constitution and other broad policy documents, as well as regulations and current energy programmes. Information collected was analysed and consolidated onto one page

in the form of a policy map. Gaps, alignments and overlaps were identified after consultation of key stakeholders from international agencies, public and private sector, a summary of which is included in the Policy Map.

Introduction

BACKGROUND

Unlimited Energy was appointed by the South African-German Energy Programme (SAGEN) carried out by Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH on behalf of German Cooperation to undertake the *Energy Efficiency and Energy Conservation Policy Mapping of the Republic of South Africa*. The study provides an overview and assessment of existing and planned energy efficiency and energy conservation policies and initiatives in South Africa across all sectors (residential, commercial and industrial) and is intended to provide the informational baseline for the Policy Mapping assignment¹. This paper provides a summary of the study, reports on key aspects and introduces the Policy Map which was developed.

CONTEXT

South Africa ratified both the UNFCCC Protocol (in 1997) as well as the Kyoto Protocol. Under the terms of the Copenhagen Accord², South Africa committed itself to reduce its green-

1. Overview and Assessment of the Energy Efficiency and Energy Conservation Policies and Initiatives of the Republic of South Africa, Unlimited Energy and GIZ, 2012. The study is not publicly available at this time but will be in the future. Please contact info@sagen.co.za to request a copy.

2. UNFCCC Copenhagen Accord, 2009.

house gas (GHG) emissions to 34 % below its “business-as-usual” growth trajectory by 2020, and by 42 % by 2025, subject to specified conditions.

This commitment to a low carbon economy poses significant challenges for South Africa given that it has a highly carbon intensive but developing economy that is vulnerable to the negative impacts of climate change³ The South African government has however recognised:

- That climate change and energy are inextricably linked and that these issues need to be coordinated if climate change is going to be successfully managed;
- The importance that energy efficiency (EE) behaviour and technologies, energy conservation and demand side management can play in transitioning to a low carbon economy; and
- The need to use available resources in a sustainable and strategic manner.

The widespread recognition in energy, environmental and industrial policy of the necessity for a dramatic scale-up in EE behaviour and technologies, energy conservation and demand side management is amplified by:

- Steadily rising energy prices, in particular for electricity, that are accelerating the need for efficiency and prompting the assessment of more cost-effective approaches to energy service provision;
- Widely reported electricity supply constraints currently experienced in South Africa and the long lead times and high capital costs involved in new build projects;
- Government’s stated intention under its New Growth Path (NGP) developed by the Economic Development Department, (EDD) in 2010 to link the creation and growth of jobs with the development of the “green economy”; and
- On-going developments in South Africa’s legal and self-regulation frameworks that increasingly reflect an environment of strengthening regulation and good corporate governance. Increasingly, this requires business to focus on, and be held accountable for, its impact on the environment and the community in which it operates. This in turn acts as an incentive for organisations to consider sustainability when making business decisions and to invest in energy efficient behaviour and technology.

Despite the recognition of the advantages and importance of EE, energy conservation and demand side management in achieving a low carbon and sustainable energy future, much of their potential remains untapped in South Africa.

While South Africa has a number of policies, regulations and initiatives in place to scale up EE behaviour and technologies, these form a “scattered environment” that lacks the coherency and alignment required to facilitate the buy-in and increased investor confidence needed for the accelerated demonstration, development and implementation of EE technologies and

initiatives. In addition, government departments, agencies and donors lack the coordination and unified approach required to create the policy certainty and dependable environment necessary for the buy-in and scale-up of EE behaviour and technologies on the part of the public and private sectors. Other issues which add to the current uncertainty and disconnectedness of the EE landscape include a lack of clarity and follow-through on policy announcements as well as targets and plans, limited access to funding, administrative complexity, a lack of awareness around EE, the quality of information disseminated to the public and the timing and extent of incentives.

These barriers can be overcome with the design and implementation of targeted EE policies, initiatives and measures in South Africa that create effective EE governance arrangements and a lack of policy risk⁴. “South African public service needs to get better at consistent long term thinking and implementation”⁵ and achieve “a level of coordination ... that we’ve not achieved to date” if we are to succeed in developing a sustainable EE, energy conservation and demand-side management sector in South Africa.

AIMS OF THE PAPER

The purpose of the review is therefore to:

- **Understand the existing policy and regulatory environment, key initiatives and programmes and stakeholders** – this report includes a high-level review and overview of an agreed set of relevant policies, legislation, regulations (including regulatory incentives); initiatives and programmes; and key international and national stakeholders in respect of energy efficiency, energy conservation and demand side management; and
- On the basis of this common understanding to develop the framework for a tool and action plan to be used to **assist in the development of a coordinated, unified and effective approach to EE, energy conservation and demand-side management** by providing an accessible tool that informs relevant stakeholders about the existing policy, regulatory and legislative environment, and can be used to chart current and future policies, regulations and programmes.

State of Play

HISTORICAL CONTEXT OF ENERGY IN SOUTH AFRICA

EE has been a cornerstone of South Africa’s energy policy since the adoption of the Department of Energy’s (DoE), previously known as the Department of Minerals and Energy (DME), National EE Strategy (NEES) of 2005. Yet, the implementation and take-up of energy efficient technologies, measures and behaviour remains muted. This report seeks to understand why this is the case and makes recommendations to address these issues.

3. National Climate Change Response White Paper, Department of Environmental Affairs (DEA), 2011. https://www.environment.gov.za/sites/default/files/legislations/national_climatechange_response_whitepaper.pdf.

4. The challenges of triggering private investment into the energy efficiency sector, de T’Serclaes and Philibert, 2010. http://www.proparco.fr/webdav/site/proparco/shared/ELEMENTS_COMMUNS/PROPARCO/Revue%20SPD%20vraie/PDF/SPD6/SPD6_de_T_Serclaes_C_Philibert_uk.pdf.

5. National Planning Commission Diagnostic Report, National Planning Commission, 2011. <http://www.info.gov.za/issues/national-development-plan/index.html>.

Table 1. Electricity Tariff Increases (2007–2012).

Year	Percentage Increase
2007	14.2%
2008	27.5%
2009	34.1%
2010	24.8%
2011	25.8%
2012	25.8%*
	*Revised down to 16% during the 2012 budget
2013-2018	8% per annum

Source: NERSA.

The mission⁶ of the DoE's EE Directorate is to:

- Develop measures to promote energy saving;
- Reduce the negative impact of energy use on the environment;
- Reduce energy costs to the economy;
- Contribute towards sustainable development; and
- To achieve a national energy policy.

The NEES⁷ of South Africa which was first introduced in 2005 to achieve the above objectives, notes in its second review (2011 – in December 2012 out for public comment) that the global phenomenon of rising incomes and population growth places increasing pressure on supply and consequently the price of energy. It goes on to say that although awareness and understanding of the importance of EE in South Africa has improved, more still needs to be done. However the strategy states that the biggest barrier is “Resistance to change, attitudes to the value of improved EE and the cost associated with the disruption of energy projects”. Conflict of interest, such as the building owner and tenant scenario, is also identified as a key barrier.

The need for a comprehensive and effective EE-Programme which meets, and possibly exceeds, the targets laid out in the EE Strategy is of paramount national importance for multiple reasons, which include high capital costs to build new generation capacity (renewable and non-renewable), increasing costs of fossil fuels, GHG emissions reduction targets, other pollutants from fossil fuels and the ever increasing demand from business shareholders and individuals/households.

South Africa's economy was built on energy intensive industrial activity, such as mining and other related industries, which was possible because of the country's large reserves of high quality coal. Unsurprisingly the mind-set of cheap and seemingly limitless availability pervaded into all spheres of society and South Africa has achieved notoriety for being one of the largest polluters (metric tonnes per capita) in the world (although only ranking 105th on the GDP per capita (Purchasing Power Parity) scale).

South Africa is also experiencing electricity supply challenges which culminated in the rolling blackouts experienced

in 2008. This occurrence had huge economic implications for the country and although a formal study was not done on the effects of the blackouts. The Economist⁸ estimated that mining production fell by 22.1 % in the first quarter of 2008, its lowest level in 40 years, and manufacturing by 1 % over the same period compared to an 8.2 % expansion experienced in the fourth quarter of the previous year. In response to this supply shortfall Eskom, the national utility which generates over 95 % of the country's electricity, has authorised the building of two new coal generation plants with a combined generation capacity of 9,560 MW. A Renewable Energy Independent Power Producer (REIPP) programme was introduced to encourage renewable energy power producers to supplement conventional power generation. The new build programme which is largely funded through electricity tariffs has resulted in large increases, as shown in the Table 1^{9, 10, 11, 12}.

The search for a solution to South Africa's energy challenges cannot be limited to electricity generation alone and it is necessary for all sectors of the economy to take steps to reduce their electricity consumption to avoid further blackouts. To this end, Government has taken steps to intensify its efforts to support and expand EE through a combination of incentives and regulations. As a result of Government actions, combined with increased tariffs which have more than doubled in less than five years, as well as growing environmental pressures, it was expected that industry, commercial and residential sector would respond to a greater extent than what has actually transpired. Although there are small pockets of achievements, the country's electricity supply continues to remain under pressure and crude oil imports continue to rise. Any decline in consumption on the whole can be attributed to the global economic downturn of 2008 and any uptake in economic activity results in an immediate increase in demand.

8. Economist. South Africa's economy. Power cuts and lower consumer demand will mean less growth. See URL: <http://www.economist.com/node/11486461>.

9. 2009: Tariff increase approved by the National Energy Regulator of South Africa (NERSA) in 2009. <http://mg.co.za/article/2009-06-25-eskom-granted-a-313-tariff-increase>

10. 2012: Decision on the MultiYear Price Determination 2 submitted by Eskom for the period 2010–2012 to NERSA. <http://www.nersa.org.za/Admin/Document/Editor/file/News%20and%20Publications/Media%20Releases%20Statements/MediaStatement-%20NERSA%27s%20decision%20on%20Eskom%27s%20required%20revenue%20application-%20Multi-Year%20Price%20Determination%202010-11%20to%202012-13.pdf>

11. 2013–2018: Decision on the MultiYear Price Determination 3 submitted by Eskom for the period 2013–2018 to NERSA. <http://www.nersa.org.za/ReadNews.aspx?NewsID=232>.

12. Source: NERSA, www.nersa.org.za.

6. For more information please see URL: http://www.energy.gov.za/files/eee_frame.html.

7. Energy Efficiency Strategy for the Republic of South Africa, Department of Minerals and Energy, 2005 <http://www.info.gov.za/view/DownloadFileAction?id=88503>.

BARRIERS HAMPERING ENERGY EFFICIENCY PENETRATION

A combination of desktop research and semi-structured interviews with industry and government participants has been used to investigate why the uptake of EE initiatives remains low. The key reasons were identified as:

- **General lack of awareness and understanding of EE:** Many companies do not have a portfolio or department with a mandate to analyse energy consumption, rather than just scrutinise their energy costs;
- **Lack of appropriate and effective (internal) financial incentives:** Coupled with deep-rooted mind-sets, “business as usual” practises persist where EE has a low priority;
- **Lack of consumer awareness and understanding:** Either unaware that they exist or if aware they are complex with different incentives for the same initiative creating overlaps or no incentives for other initiatives creating gaps;
- **Inadequate co-ordination mechanisms:** While Government policies and programmes remain voluntary, many private and public sector operations take little notice of them. There is also a lack of alignment of national economic, industrial, energy and climate objectives;
- **Non-optimal enabling framework:** Lack of effective mandate for government departments/branches or uncertainty as to mandate;
- **Need for capacity building:** The up-skilling of existing capacity and the recruitment of new resources in the public sector is vital if the Government is to achieve its objectives; and
- **Clear disincentive for municipalities to participate in EE initiatives:** Municipalities, who distribute the bulk of the country’s electricity, are heavily reliant on the revenue from the sale electricity – 24–32 %, shown in Figure 1¹³.

Review of Policy Documents and Initiatives

METHODOLOGY

The overview of the country’s EE landscape used a top down approach. All official Government documents which make reference to EE were considered and included in the report, starting with the country’s constitution. Using this hierarchical approach, each government document was allocated as follows:

- Supreme Law;
- Energy Policy and Strategy;
- Energy Legislation and Regulations;
- EE Incentive Programmes, Taxes, Rebates and other Incentives;
- Industrial Policy, Strategy and Relative Incentive Programmes;

- Environmental and Climate Change Policy and Strategy;
- Transport Policy and Strategy;
- Overview of current EE Initiatives; and
- Other Government, International Agencies and Donor Funded Programmes.

Each of the below sections provide a detailed description of the individual policy document, identifies its specific link to EE, and discusses its effectiveness in terms of gaps, alignments and overlaps

Selected Government policies and programmes are presented below providing a brief description and any links to EE. The full list of policy and strategy documents, regulations, taxes, incentives and programmes analysed can be found in the full report (Unlimited Energy and GIZ 2012).

SUPREME LAW

Constitution of the Republic of South Africa, 1996 (as amended)

The Constitution is supreme law of South Africa that applies to all law and binds the legislature, the executive, the judiciary and all organs of state. Although there is no specific reference to energy or EE, the bill of rights contained therein enshrines the right to an environment not harmful to health or well-being, and to have the environment protected for the benefit of present and future generations through measures (reasonable legislative and other) that ... secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development¹⁴. The cooperative governance model poses practical challenges to the efficiency, effectiveness and accountability for the policy design and implementation of EE policies and initiatives in South Africa.

ENERGY POLICY AND STRATEGY

White Paper on the Energy Policy of the Republic of South Africa, DME (1998)

The White Paper provides the overall direction for energy decision making in South Africa, by outlining the objectives and priorities for energy policy in the country. The White Paper recognises that energy production and distribution should be sustainable and that energy production and utilisation should therefore be done with maximum efficiency at all times and calls for specific measures to support EE. Although the White Paper provides a solid policy framework the scheduled review of the Paper, which was due by 2008, did not take place and as a result it has had a moderate impact on the uptake of efficient technologies and initiatives in South Africa. While some of these objectives and measures have been achieved, a number have yet to reach implementation.

National Energy Efficiency Strategy (NEES) of the Republic of South Africa, DME (2005) including 1st Review 2008

The Strategy sets out the intention to implement a variety of regulatory measures, demonstration and awareness raising measures by Government, as well as voluntary agreements. The

13. Source: Demand Side Management for Electricity and Water and Financial Implications for Local Authorities, Palmer Development Group/Employment Promotion Group, 2012. <http://www.bkcob.co.za/media/files/RCI%20Final%20report%20v2%202%2020111208%20ip.pdf>

14. Section 24 of the Constitution of the Republic of South Africa.

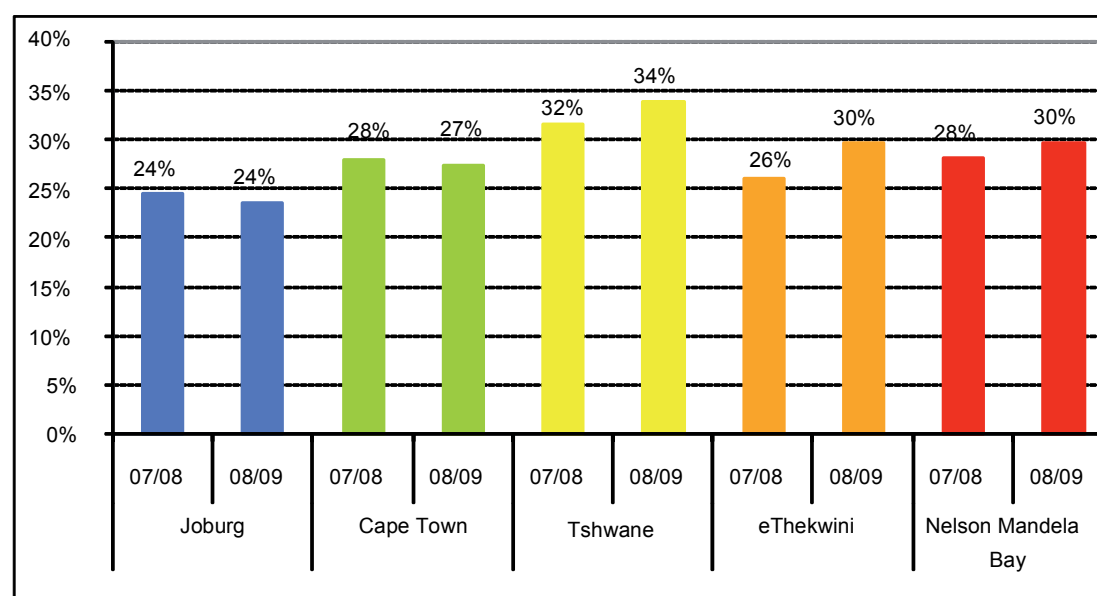


Figure 1. Electricity revenue as % of total revenue of South African municipalities. Source: Palmer Development Group, 2012.

Table 2. Examples of EE Programmes per Sector.

Industry and Mining	Commercial and Public Buildings	Residential	Transport	Power Generation
1) Demonstration programmes 2) Mandatory standards 3) Mandatory audits for energy intensive industries	1) EE standards for buildings 2) Energy management system promotion 3) Standards development for office buildings	1) Appliance labelling Awareness campaign 2) Mandatory EE standards for housing and appliances	1) Promote fuel efficiency through fiscal reform 2) Efficiency labelling for vehicles 3) Promotion of efficiency technology 4) Information campaigns Longer term public transport infrastructure development	1) Sub-metering to identify opportunities and create a baseline 2) Upgrade of administrative buildings

goals of the strategy are broad and include: improve national health, support job creation, alleviate energy poverty, reduce environmental pollution, reduce carbon dioxide emissions, improve industrial competitiveness, enhance energy security and reduce the need for additional generation capacity. The Strategy (2005) is divided into 4 sector programmes Industry and Mining; Commercial and Public Buildings; Residential and Transport. The Power Generations Sector was added in the 2008 revision. Each sector is allocated specific programmes, examples are shown in Table 2.

The targets set out in the Strategy are voluntary and there are no penalties for not entering into the voluntary target agreements, or for failure to achieve desired improvements. As a result, the majority of the proposed measures in the Strategy have yet to be implemented.

National Energy Efficiency Strategy of the Republic of South Africa, DoE (2nd Review 2011)

The Strategy is out for public comment since December 2012 and thus not an official document yet. It does however aim to achieve many of the targets outlined in the previous version

(2008) and proposes similar instruments and mechanisms in order to achieve these objectives. New approaches within this Strategy relate to the development of an independent systems operator, the introduction of Energy Performance Certificates (EPC) and exploring solutions for building owners to gain financial benefit from installing EE improvements.

A key deficiency of the revised EE Strategy (in draft form) is considered to lie in an inadequate review of the current status quo, including successes and constraints to an effective EE programme in South Africa to date. Implementation challenges have been a feature of concern in the rollout of previous versions of the Strategy. A critical assessment of persistent barriers, and focused analysis on how these can be overcome, is critical to achieving effective gains within the EE Strategy process going forward. In broad terms, the uptake of the Strategy is hampered by the lack of clear and guiding legislation focused on EE in South Africa, including an outline of key measures, programmes and targets. Issues related to concerns in the self-funding approach also remain unresolved in the current iteration of the Strategy.

ENERGY LEGISLATION AND REGULATION

National Energy Act, DME (2008)

The Act covers all energy carriers. With regards to EE specifically it provides for the establishment of the South African National Energy Development Institute (SANEDI), including the assimilation of the National Energy Efficiency Agency (NEEA) into SANEDI. The Act also requires the annual publication of an Integrated Energy Plan (IEP) covering at least a 20 year planning horizon. The purpose of this plan is to provide for a publicly accessible energy plan for the country. This Act also provides the legislative basis for a number of potentially important EE related matters:

- Planning – including balancing supply and demand, the environment, international commitments and greenhouse gas mitigation;
- Mandate and implementing agency – SANEDI is required to, undertake EE measures to increase EE throughout the economy and the GDP per unit of energy consumed, and optimize the utilization of finite energy resources¹⁵;
- Basis for a regulatory framework – the Minister of Energy is empowered to make regulations regarding;
- Minimum levels of EE in each sector of the economy;
- Steps and procedures necessary for the application of EE technologies and procedures;
- Standards and labelling for residential appliances, devices and motor vehicles;
- Prohibition of the manufacture, or importation or sale of electrical and electronic products and fuel burning appliances for reasons of poor EE;
- EE standards for specific technologies, processes, appliances, devices, motor vehicles and buildings; and
- Energy conservation measures to be used during energy shortage.

The Act provides for far-reaching measures that can positively impact the planning, implementation and governance of EE in South Africa. The act is arguably too new for its impact to be properly assessed.

National Energy Act: Regulations on the Allowance for EE Savings (GNR 729), DoE 2011

Tax incentives are recognised as a key measure that can assist in the scaling-up investment in EE behaviour and technology by incentivising the market through policy certainty and funding. This Regulation provides for the process and procedural requirements necessary for a taxpayer to claim an allowance for EE. However, the concern is that it is not in effect yet indicating a lack of coordination between the Department of Energy and the National Treasury.

EE INCENTIVE PROGRAMMES, TAXES REBATES AND OTHER INCENTIVES

Carbon Dioxide Vehicle Emissions Levy

This levy was implemented by National Treasury and took effect in 2011. It applies to all new passenger vehicles purchased, as well as to double-cab vehicles. In the case of passenger vehicles, the levy rate is €7 (R75) per g/km on emissions exceeding the threshold of 120 g/km. The tax is presumed to incentivise vehicle manufacturers to invest in fuel efficient technology and to encourage customers to purchase more fuel efficient vehicles. Concerns raised by motor manufacturers and a perverse incentive for consumers to purchase used vehicles. More detailed research and analysis into the impact of the tax is required to gauge its outcomes and effectiveness to date.

Carbon Tax Discussion Paper, National Treasury, 2010

The Carbon Tax Discussion Paper does not yet form official Government policy, but it does form part of a wider process of environmental fiscal reform in South Africa and outlines Government's thinking in this regard. The discussion paper argues for the short-term introduction of an upstream tax at the point where fuels enter the economy, based on the carbon content of each fuel. These fossil fuel inputs include coal, oil and natural gas. A phased tax of €7 (R75) per tonne of CO₂ increased to €18 (R200) per tonne CO₂ is proposed. South Africa's profile of energy demand, characterised by relatively high energy intensity, makes the more efficient use of energy particularly important. The overriding purpose of the proposed carbon tax is to reduce the growth of South Africa's GHG emissions in an economically efficient manner. The discussion paper notes that an overall economic effect of the tax is likely to be an increase in the promotion of low emission intensity sectors, including renewable energy, EE and a range of low carbon technologies.

National Climate Change Response Policy White Paper, DEA 2011

This White Paper was published shortly before Conference of the Parties (COP) 17 in Durban, and it establishes the overarching policy framework for South Africa's climate change response. The White Paper establishes priority areas and activities for both adaptation and mitigation. The water, agriculture and forestry, health, biodiversity and human settlement sectors are prioritised for national adaptation efforts, whereas the energy, transport, mining and industrial sectors are prioritised for mitigation action. The Policy includes a number of important elements related to EE. EE is recognised as a primary short-term mitigation option available to the country. The significant scaling up of EE, particularly in the industrial, residential and transport sectors, is further emphasised as a key medium-term mitigation option. The White Paper has only recently been published, and as such its impact on the uptake of EE is still to be determined.

OVERVIEW OF EE INITIATIVES

Eskom Integrated Energy Demand Side Management Programme (IDM)

The IDM programme is focussed on both short-term security of electricity supply and delivery of the national EE policy objectives of its shareholder (the Department of Public Enterprises). The programme coordinates and consolidates a variety of initiatives aimed to optimise energy use and incorporates

15. Section 7 of the National Energy Act, 2008 as amended.

a broad range of mechanisms to promote EE and demand reduction that targets all market sectors (industry and mining, commercial, agriculture and residential) and a range of intervention/technology types.

Historically the programme was skewed towards demand management and influenced by the revenue impact associated with loss of sales and the inherent conflict between electricity sales and demand-side management (DSM). In the context of supply constraints, DSM now presents an opportunity to improve security of supply and the IDM programme has therefore been increasingly emphasised and promoted by Eskom. In addition, IDM's focus has shifted to a more holistic approach that incorporates demand response, demand management and EE aimed at optimising the available supply capacity. The IDM programmes reported 3,072 MW of verified cumulative savings as at the end of the 2012 financial year.

A range of new funding mechanisms has been developed to enhance the accessibility of the IDM fund, namely:

- Energy Service Company (ESCO) Model: funding mechanism is best suited to individual projects with unique requirements where the project size exceeds 1 MW;
- Standard Offer: incentive at a standard published rate per technology type per unit of energy (kWh) that is saved during a specific period (16 hours) of a weekday;
- Standard Product: pre-approved rebates for replacing inefficient technologies with specific, pre-approved technologies.

Performance Contracting: bulk buying of energy savings from project developers, such as ESCO's;

- Solar Water Heating Programme: rebate paid for the installation of a qualifying SWH system; and
- CFL Rollout: Swap incandescent lights (destroyed) with CFL.

Building and Measurement Standards: SANS 204, 10400XA, 50001 and 50010

SANS 204 and 10400XA: New buildings must comply with the 'deemed to satisfy' Standards (10400XA) which prescribes minimum requirements for energy usage, such as a minimum of 50 % of the annual average heating requirement for hot water must be provided by means other than electric resistance heating. SANS 204 is a voluntary building standard, which has more demanding requirements and can be viewed as 'best practise'. The intention is for the 10400 to be upgraded to 204 over time.

Although 204 and 10400XA were developed over a long period of time, the promulgation of the 10400XA in November 2011 surprised many in the industry. The biggest challenge being faced is that the majority of the industry is still not aware of the implications and requirements. The municipal Building Control Officer's have also had little exposure to the new regulations and are therefore unable to enforce them. A national training programme (with the support of the Swiss Development Corporation) has been put in place to address this.

SANS 50001 and 50010 were published in 2010 and 2011, developed by the SA Bureau of Standards, to allow the Department of Energy to develop and promulgate the necessary regulations (under the National Energy Act) in order for them to

become a mandatory requirement. They have also been written to respond to the existing tax EE tax incentives (12 I and 12 L) as well as future tax incentives introduced by Treasury.

50001: Specifies requirements for establishing, implementing, maintaining and improving an energy management system, whose purpose is to enable an organization to follow a systematic approach in achieving continual improvement of energy performance, including EE, energy use and consumption.

50010: Provides a methodology for the determination of energy savings that may be used in a range of voluntary or regulatory processes which may require the impact of interventions on energy use to be calculated.

It is not clear at this stage if and when regulations to make SANS 204, 50001 and 50010 mandatory will be introduced.

Policy Map

The paper provides a detailed overview and assessment of the country's EE policies; however such a detailed analysis may not suit or provide information in the format which makes it accessible to all energy users and stakeholders. A Policy Map, shown in Figure 2, was therefore developed to provide a visual representation of the report and allow interested parties to get a 'snapshot' of the EE landscape in South Africa.

A pyramid was selected to reflect and align with the hierarchical, top-down approach used in the report. The cross-cutting nature of EE means that it cannot exist within one department of the DoE, as demonstrated by the number of stakeholders identified in this paper. To reflect this, the pyramid has a vertical line running down the middle which separates the Department of Energy (on the left), which is the custodian of EE and all the other Government departments (on the right), who also have a meaningful role to play.

The pyramid segments the various Government documents according to the categories listed in the Methodology Section above, with each of these categories being differentiated by the use of a unique colour.

The entire pyramid is then supported by a square block or 'foundation' section. This represents, in practical terms, the current status of EE implementation in South Africa as a result of the actions taken by the Government to achieve its EE objectives through the introduction of the various policies, regulations, programmes, incentives and taxes. The status is broken down into the following sections, namely: 1) key Government achievements to date; 2) the gaps which have been identified in the DoE and the rest of Government; 3) alignments which could resolve some of the identified gaps; 4) opportunities which could be targeted; and 5) overlaps to be addressed.

The primary objective of the Policy Map is to take the study one step further. Where the paper consolidates all Government actions, regardless of their originating department, relating to EE into one document, the Policy Map condenses them into one page through the use of a diagram. By aligning and basing the Policy Map to the framework used in the paper, any interested party requiring more detailed information is able to cross-reference to the report. The full report (Unlimited Energy and GIZ, 2012) provides full references and lists all supporting documentation, should there be a requirement to access the source documents.





Figure 2. South African Energy Efficiency High Level Policy Map.

Conclusion

South Africa identified the importance of EE and the need to develop and implement a cohesive EE programme as far back as the 1990's.

This intention was first stated in the White Paper on Energy Policy (1998). Since the release of the white paper, the South African Government has introduced a multitude of policy documents and programmes, which are either directly or indirectly aimed at achieving increased EE. Examples include the NEES (2005) which targets EE reduction targets specifically, the National Energy Act which provides the Minister of Energy with the necessary mandate to introduce EE regulations, and specific government-funded programmes such as the Solar Water Heating Rebate scheme. With the rolling blackouts experienced in 2008, and the tight constraints in respect of electricity supply which are expected to last for some time, EE is a national priority in South Africa.

The mandate to introduce and successfully implement EE in South Africa lies with the DoE. However, because of the cross-cutting nature of EE it relies on many other Government institutions to support and execute its EE policies, programmes and initiatives. For example, the development of national EE standards lies with the South African Bureau of Standards (SABS) and the enforcement of mandatory EE building standards with the National Regulator for Compulsory Specifications (NRCS), both of which fall under the Department of Trade and Industry. These institutional arrangements have the potential to create two consequences: 1) the implementing body may be mistakenly viewed as the responsible authority; and 2) the opportunity exists that the supporting Government departments do not apply the required urgency or intensity with the implementation of the EE programmes allocated to them. This may be due to resource constraints and/or EE being viewed as a secondary or non-core activity by the relevant Government department.

For EE to achieve its maximum potential, it is imperative that all stakeholders have a clear understanding of the institutional arrangements and the EE framework that the Government has implemented. The objective of this paper and the development of the policy map is to provide energy users with an up-to-date and easy to use reference document. By consolidating all relevant Government documents and programmes pertaining to EE into one paper, which also identifies the relevant implementing bodies, and how they interact; stakeholders are able to easily identify their obligations (e.g. applicable regulations) and opportunities (e.g. available incentives). The paper also provides stakeholders with an outlook of what can be expected

in the future. A holistic picture of the EE landscape is useful to both Government and the private sector.

Finally, EE operates in a dynamic environment. The paper and the background study provide a *status quo* of the EE landscape and should be updated annually to reflect any changes to existing policy, the introduction or removal of initiatives and programmes as well as to report on progress.

Abbreviations

CFL	Compact Fluorescent Lamp
CO ₂	Carbon Dioxide
DEA	Department of Environmental Affairs (formerly DEAT)
DME	Department of Minerals and Energy
DoE	Department of Energy (formerly included in DME)
DSM	Demand Side Management
EDD	Economic Development Department
EE	Energy Efficiency
EEDSM	Energy Efficiency Demand Side Management
ESKOM	National Electricity Utility of South Africa
ESCO	Energy Service Company
GDP	Gross Domestic Product
GHG	Greenhouse Gas
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit
IDM	Integrated Demand Management
IEP	Integrated Energy Plan
kWh	kilo Watt hour
NDP	National Development Plan
NEEA	National Energy Efficiency Agency
NEES	National Energy Efficiency Strategy
NERSA	National Energy Regulator of South Africa
NGP	New Growth Path
NPC	National Planning Commission
NT	National Treasury
SANS	South African National Standard
SAGEN	South African – German Energy Programme
SANEDI	South African National Energy Development Institute
SANERI	South African National Energy Research Institute
SWH	Solar Water Heating
UNFCCC	United Nations Framework Convention on Climate Change