
GENERAL NOTICE

NOTICE 1000 OF 2012

DEPARTMENT OF ENERGY

DRAFT SECOND NATIONAL ENERGY EFFICIENCY STRATEGY REVIEW

I, Ms Dipuo Peters, Minister of Energy, hereby publish the proposed draft second national energy efficiency strategy review 27 July 2012.

Interested persons are invited to provide written comments on the proposed strategy, **on or before 30 January 2013** at any of the following address:

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Please note that comments received after the closing date may be disregarded.

Please contact Nondumiso Nyuswa at (012) 406 7684 or Maphuti Legodi at (012) 406 7645 for any enquiries.

MS DIPUO PETERS, MP

MINISTER



**National Energy Efficiency Strategy
of the
Republic of South Africa**

Department of Energy

Second Review: 27 July 2012

Foreword

This second review of the National Energy Efficiency Strategy comes at a time when South Africa has been presented with several challenges. The international financial crisis has hit economies worldwide and led local companies to reduce their labour force just when the nation planned to accelerate its economic growth. Our energy supply industry has also suffered from a short-term inability to fully address its obligations to society due to a lack of capacity to meet electrical demand. The rising price of both electricity and petroleum products continues to add to the inflationary pressures on the economy and every economic sector.

These are not the only constraints the nation faces; South Africa, with many other developed and developing countries, has become increasingly aware of and is now committed to address the climate change challenges by implementing measures designed to mitigate and adapt to the problems it causes. It is generally agreed by the scientific community that most greenhouse gas emissions may be attributed to anthropogenic activity, whether through energy production and use or the increasingly intensive agricultural industry.

The plans of the Department of Energy are now reflecting the constraints faced due to climate change as it affects the nation's energy security, in our Energy Planning, and the Integrated Resource Plan.

This second review of the National Energy Efficiency Strategy expands on the previous versions in accordance with international trends and in line with the plans for climate change mitigation. New measures are also being introduced through legislation, incentives, standards and training initiatives aimed at supporting the introduction of more efficient practices, energy management and systems optimisation to realise the potential savings and reduce the wastage which characterises every sector. In the implementation process, other national objectives will be addressed in creating 'green' jobs and developing the energy services market.

Dipuo Peters M.P.

Minister of Energy

Executive Summary

The National Energy Efficiency Strategy (NEES) of the Republic of South Africa (RSA) is herewith revised for the second time since its publication in 2005. In this edition the steps necessary for a Strategic Process of sector target review, and the elements of a plan to achieve reductions in energy intensity are set out.

The RSA is ranked highly among the world's energy intensive nations, and therefore consequently also amongst the highest in terms of national greenhouse gas emissions. This can be attributed to the fact that the economy is predominantly coal based and, until recent years, a legacy of low electricity cost has hindered investment in energy efficiency.

The Government is committed to implementing this Strategy for the RSA in order to achieve a reduction in energy intensity over the next two decades, where economically feasible, as a national priority. This strategy should realize the goals of improving economic competitiveness and job creation, along with the positive effect of reducing greenhouse gas emissions.

In this Strategy review process, the energy usage patterns of the component businesses and representative consumers of major sectors of the economy have been reviewed. Their susceptibility to adopting modern energy management practices and technologies and their potentials have been identified. International advice and views have been solicited which give confirmation of the potentials of these entities to contribute toward significant sectoral improvements in energy intensity reduction.

The Strategy takes the state of energy supply and usage in 2000 as its baseline year and projects a path of energy intensity reduction improvement in the component sectors of the economy for a resultant projected improvement of 12% by 2015, and sets the scene for future energy intensity reduction targets.

Instruments, many of which are internationally used, have been reviewed for their suitability and application in the South African context, and have been set out in Sector Implementation Plans for deployment by Government, Business and Civil Society.

Whereas the first edition of the NEES was aimed at creating an awareness for the importance of efficient use of energy, the 2012 revision takes a longer term view at the contribution that all sectors in the South African society can make towards creating a sustainable future where:

- Government and its respective departments will continue to develop appropriate policies, monitoring capabilities and supporting regulation and incentives;
- Private and public enterprises have committed themselves to the implementation of plans to achieve increased energy efficiency improvement goals.

The NEES attempts to focus the efforts of all stakeholders towards building the required capacity to achieve the long-term goal of improving the energy efficiency of the RSA economy.

Abbreviations

CDM	Clean Development Mechanism
CFL	Compact Fluorescent Lamp
DoE	Department of Energy
DEA	Department of Environmental Affairs
DPE	Department of Public Enterprises
DPW	Department of Public Works
DSM	Demand Side Management
ECSA	Engineering Council of South Africa
HVAC	Heating, Ventilation and Air Conditioning
IDM	Integrated Demand Side Management
IEA	International Energy Agency
IEP	Integrated Energy Plan
IRP2010	Integrated Resource Plan of 2010
MTEF	Medium Term Economic Framework
NAAMSA	National Association of Automotive Manufacturers of SA
NCPC	National Cleaner Production Centre
NDOT	National Department of Transport
NEES	National Energy Efficiency Strategy
NERSA	National Energy Regulator of South Africa
NRCS	National Regulator of Compulsory Specifications
NT	National Treasury
SANAS	South African National Accreditation System
SANERI	South African National Energy Research Institute
SABS	South African Bureau of Standards
SANEDI	South African National Energy Development Institute
SDC	Swiss Agency for Development and Cooperation
STANSA	Standards South Africa
SAPIA	South African Petroleum Industry Association
the dti	Department of Trade and Industry
UNIDO	United Nations Industrial Development Organization

Definitions and Terminology

APPLIANCE LABELLING

Labels denoting the energy consumption of appliances which may be linked to a rating system

PRIMARY ENERGY

The energy inherent and extractable from an energy source.

ENERGY CARRIERS

The form of energy in which energy is provided to the user, as per the classification between electricity, gas, liquid and solid fuels.

In order to eliminate misunderstanding and to stay in-tune with international best-practice, the following terms related to energy efficiency are adopted from the most recent work (February 2012) of the ISO/IEC JPC2 – Joint Project Committee – Energy efficiency and renewable energy sources - Common terminology. This international document has the following heading numbers (repeated here to provide guidance and clarity w.r.t. interpretation).

3.1.4 Terms related to energy efficiency

3.1.4.1 energy efficiency

3.1.4.1.1 energy efficiency indicator

3.1.4.1.1 specific energy consumption

3.1.4.1.2 energy intensity

From the numbering system used in the ISO/IEC JPC2 document as well as from the definitions themselves (given below) it is clear that energy efficiency is the “root concept” and that specific energy consumption as well as energy intensity are *indicators* of energy efficiency.

ENERGY EFFICIENCY

ratio of other quantitative relationship between an output of performance, service, goods or energy, and an input of energy

EXAMPLE Conversion efficiency, energy required/energy used, output/input, theoretical energy used to operate/energy used to operate.

Note 1 to entry: Both input and output have to be clearly specified in quantity and quality, and be measurable.

Energy Efficiency Indicators:

SPECIFIC ENERGY CONSUMPTION

energy consumption per unit of output or scale

EXAMPLE Gigajoule (GJ) per ton of steel, annual kWh per m², litres of fuel per Km, etc.

ENERGY INTENSITY

energy consumption per monetary unit of output

EXAMPLE Gigajoule per euro of GDP (gross domestic product), Gigajoule per unit of turnover.

Conversion Table

Weights and Measures (Metric and International Systems)

Gcal : Gigacalorie (106 kcal); (1 MWh = 0,86 Gcal)

GJ : Gigajoule (109 Joule); (1 MWh = 3,6 GJ;

1 GJ = 0,0341 tce; 1 GJ = 0,0239 toe)

h : hour(s)

kW : kilowatt

MW el : Megawatt electric (1.000 kilowatts)

MW th : Megawatt thermal (0,86 cal/h)

PJ: Petajoule (10^{15} Joules) unit of energy

tce : tonne of coal equivalent (7*106 kcal or 29.302 MJ or 8,14 MWh)

toe : tonne of oil equivalent (107 kcal or 41.860 MJ or 11,628 MWh)

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1 Introduction

Improving Energy Efficiency is globally recognized as the most cost-effective means to sustainably reduce energy usage and mitigate climate change [1]. This National Energy Efficiency Strategy presents a coordinated approach aimed at improving National Energy Efficiency thereby contributing the achievement of other National Objectives.

The White Paper on Energy Policy, published in 1998 states:

“Significant potential exists for energy efficiency improvements in South Africa. In developing policies to achieve greater efficiency of energy use, government is mindful of the need to overcome shortcomings in energy markets. Government would create energy efficiency consciousness and would encourage energy efficiency in commerce and industry, will establish energy efficiency norms and standards for commercial buildings and industrial equipment and voluntary guidelines for the thermal performance of housing. A domestic appliance-labelling program will be introduced and publicity campaigns will be undertaken to ensure that appliance purchasers are aware of the purpose of the labels. Targets for industrial and commercial energy efficiency improvements will be set and monitored.”

The first National Energy Efficiency Strategy was published in March 2005 to give effect to the provisions of the White Paper on Energy Policy, (1998) in respect of energy efficiency. Government intends to review the strategy every 3 to 5 years as appropriate, thereby extending the currency of the document through to calendar 2030. The first review was released during October 2008 after consultation with stakeholders. The Strategy has now been reviewed for a second time and is now referred to as The National Energy Efficiency Strategy of 2012.

The sector targets presented in this document are applicable up to the end of 2015. The targets put forward by Government are aspirational targets and are set for broad energy-use sectors. From these aspirational targets, individual energy users are expected to develop their own performance targets. The baseline from which improvements will be measured remains the year 2000 as in previous versions of the strategy.

Commitments to targets beyond 2015 still need to be finalized. This will be done as part of a process of engagement, which will include sector players.

The *White Paper* gives a mandate to the Department of Energy to promote Energy Efficiency through various means. The Energy Act and the Electricity Regulation Act give the government considerable powers, correspondingly the Department of Energy will invoke regulations where necessary, implement plans where possible, and ensure appropriate leadership in the sector. The remainder of this document outlines Government's strategy to improve the National Energy Efficiency through 2015 and beyond.

1.1 Measurement of Energy Efficiency

A key objective of this Strategy is that measures taken should not be at the expense of national economic growth, but rather in support of it. For this reason, improvement in Energy Efficiency will be measured against an adjusted (for growth) baseline using the year 2000 as the base-year. Measurement of performance will be done according to the principles set out in SANS 50 010 (National Standard for Measurement and Verification of Energy Savings).

1.1.1 Energy management options

There are a number of different options which, when implemented, can result in an improvement in Energy Efficiency as defined (see definition). There is a tendency by some stakeholders to classify energy management options strictly according to their underlying technical implementation mode. This is not the intention of Government. For the sake of clarity, the following options contribute to Energy Efficiency (as defined) and should be included for reporting purposes as well as for tracking of performance against the aspirational targets provided in this document.

- Energy Efficiency
- Energy Conservation
- Energy Substitution by renewable energy sources on the demand-side.
- Energy Substitution through fuel switching. (See note on fuel switching).
- Re-Generation (See note on re-generation).

Note on fuel switching:

The inclusion of fuel switching is ONLY allowed in cases where the switch to a different fuel results in a *de facto improvement* in Energy Efficiency – this is not always the case and should be verified before being included.

Note on re-generation:

Re-generation is typically used in the transportation sector where locomotives, large mine dump trucks, etc. re-generate energy as a result of braking. If this is implemented and the energy generated is used to offset purchased energy from the grid, the resulting reduction in purchased energy can be considered for the purposes of meeting the targets specified herein.

Own-generation

For the purposes of this document, own-generation could be grouped into three broad categories;

1. Own-generation using waste-heat from a production process.

2. Own-generation using waste (even if obtained from elsewhere) as a fuel source.
3. Own-generation using purchased fuel (other than waste).

The first two options above (i.e. own-generation using waste-heat and own generation using waste as a fuel source) should be included for reporting purposes as well as for tracking of performance against the aspirational targets provided in this document. Recovery of energy from waste must be undertaken in compliance with relevant regulations promulgated in terms of the National Environmental Management: Waste Act, (No 59 of 2008).

Own-generation using purchased fuel should not be considered as contributing towards meeting the targets specified.

Additional guidance and context is provided in Figure 1 below. The resulting improvement in Energy Efficiency (regardless of the option(s) used to realize the improvement) should be measured according to SANS 50 010.

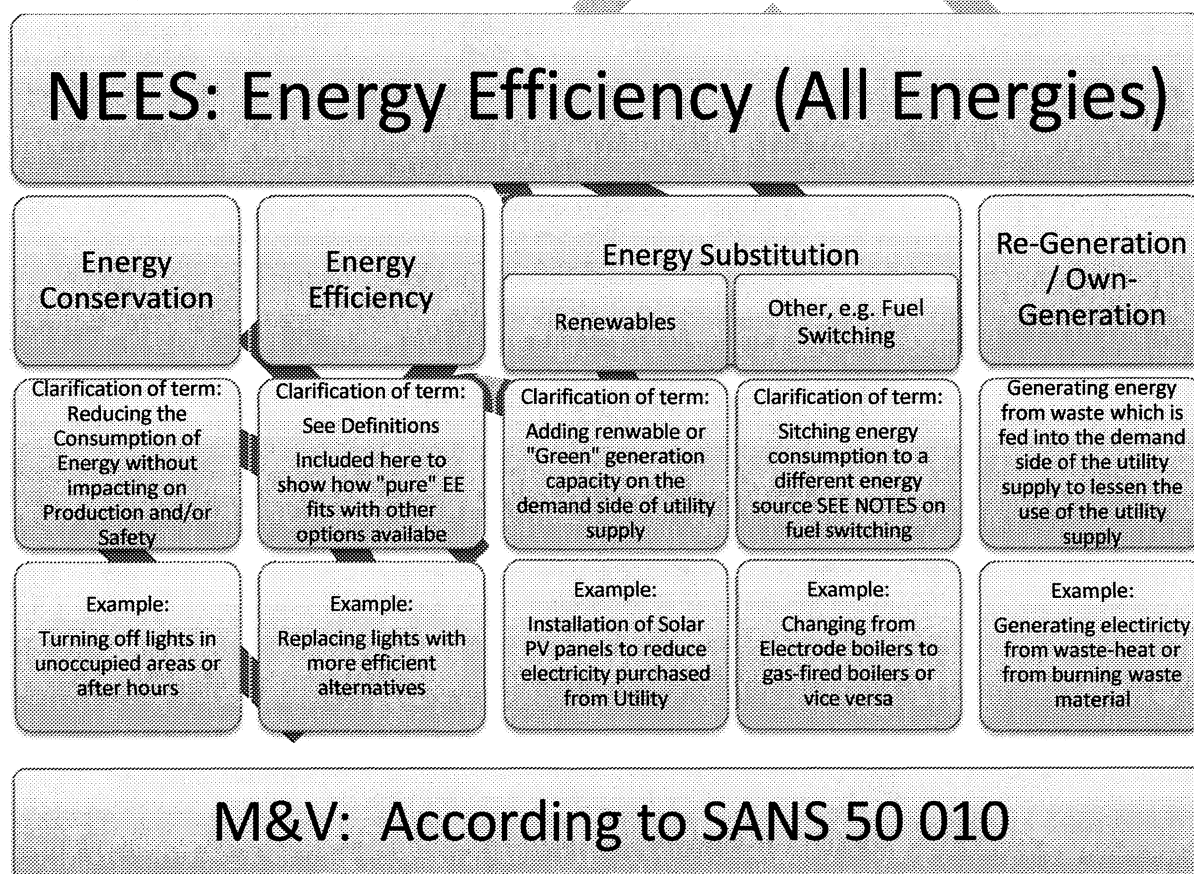


Figure 1 Energy Efficiency options to be considered

2 Vision and Goals

Vision

To reduce the energy intensity of the South African economy through improvements in energy efficiency

Goals

Achievement of this vision will assist in fulfilling the following national objectives:

- Enhancing energy security by making better use of existing and new generation capacity.
- Improving South Africa's global competitiveness through reduced energy input cost.
- Decoupling growth in energy consumption (and GHG emissions) from growth in GDP.
- Improving global competitiveness will, in turn, contribute to job creation.

Aspirational targets for sector energy efficiency improvements are considered useful in managing the transition to a more energy efficient economy. Targets expressed as a reduction in energy demand levels in 2015 relative to energy use levels in 2000, are adjusted to take account of changes in production, sales, etc. according to the methodology described in SANS 50 010.

When considering the targets below the definitions on page iv are important. An *improvement* in energy efficiency at the sector level leads to a *reduction* in energy intensity at the national level.

A national energy intensity reduction target of 12% by 2015 for all uses of energy is set. Sub-sector targets are as follows:

Sector	Target
Industry	An energy efficiency improvement of 15% by 2015
Mining	An energy efficiency improvement of 15% by 2015
Power Generation	An energy efficiency improvement of 15% by 2015 measured by energy consumption of equipment, excluding the thermodynamic cycle.
Commercial & Public Buildings	An energy efficiency improvement of 15% by 2015
Residential	An improvement in energy efficiency per capita of 10% by 2015
Transport	An energy efficiency improvement of 10% by 2015

More detailed discussion on these targets is provided in section 4 while the strategic implementation outline for the next three years is presented in section 6.

Paragraph>>>>>>>

The implementation of the strategy includes various government departments such as DOE, DST, DTI, DPW, DPE, NT, COGTA, Transport and respective agencies such as SANEDI, DBSA, NERSA, ESKOM, SALGA, SANAS, SABS, NRCS and others. In addition, industry partners, academia, international partners, labour partners, and communities.

3 The Status Quo

3.1 Energy intensity and energy availability

South Africa is a developing nation with significant heavy-industrial and extractive-industrial (mining and mineral extraction) components in the economy. Large indigenous coal and mineral reserves have provided a competitive advantage to the South African economy and this legacy is at the root of our industrialized economy.

By international standards, South Africa uses a relatively high amount of energy per unit of Gross Domestic Product (GDP) (see Figure 2 below).

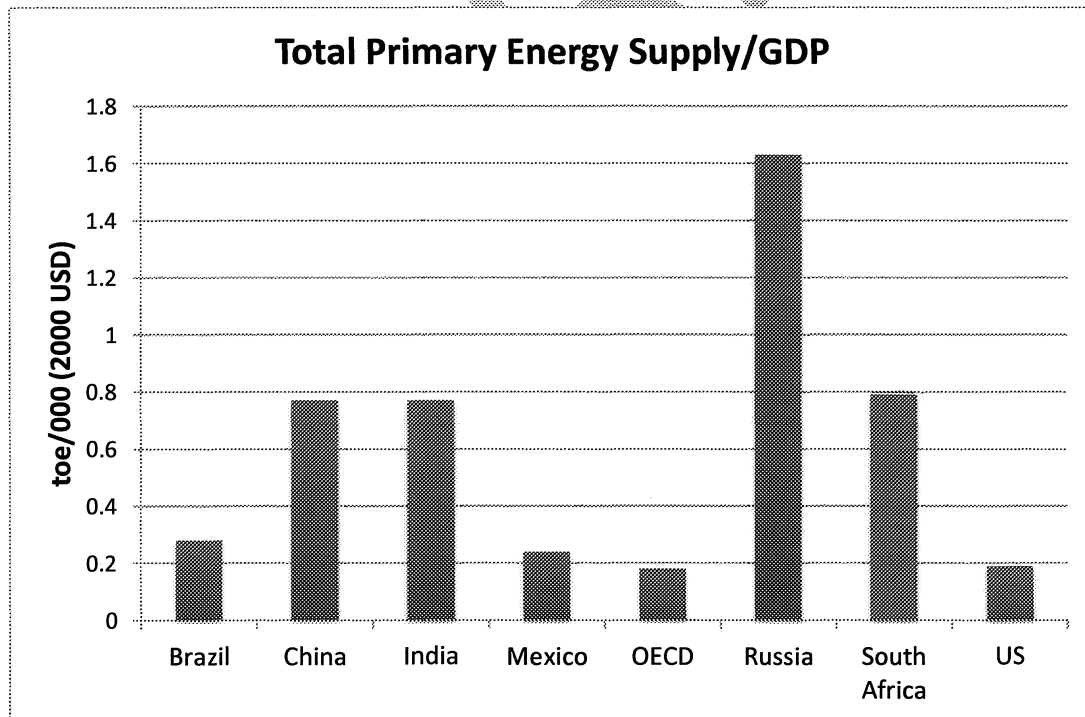


Figure 2 2009 Total Primary Energy Supply / GDP. Source: 2011 Key World Energy Statistics, IEA.

Until recently, South Africa's abundant coal reserves have contributed towards the unit price of electricity being historically amongst the cheapest in the world. This has had the effect of rendering some energy efficiency projects uneconomic when compared to plant expansion projects and/or projects that promised to increase production and sales. This historical situation with regard to coal, electricity and petroleum products no longer applies.

In early 2008 South Africa experienced a shortfall in generating capacity which resulted in widespread power outages. Since then Government, Eskom, Business and large Metropolitan electricity distributors have worked together to guard against power shortages as a result of the country's capacity constrained network.

3.2 Energy Supply in the RSA

3.2.1 Primary Energy Supply

The total *primary* energy supply to South Africa was 6,364 PJ in 2009 as against 4,295 PJ in 2000. Coal contributed 70%, as against 79% (2000), of the total national primary energy supply, as illustrated in Figure 3, below.

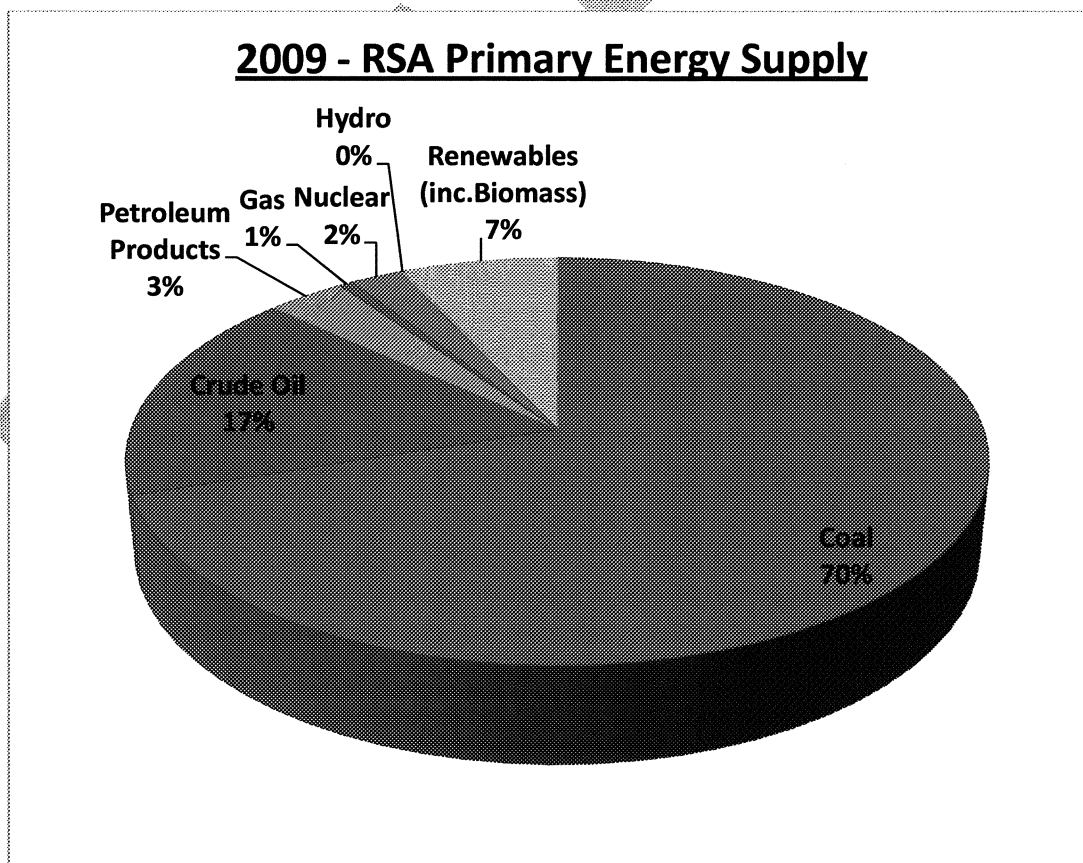


Figure 3 2009 Primary Energy Supply (to nearest whole number). Source: DoE Energy Balances .

3.2.2 Sectorial Usage

The totalised final energy demand by sector in 2009 was 3,236 PJ, as against 2,193 PJ in 2000. The largest energy consuming sectors were industry & mining, transport and residential. The remaining sectors (Agriculture, Commerce and non-specified) accounted for 16% of energy usage. Figure 4 below depicts the 2009 final energy use by sector.

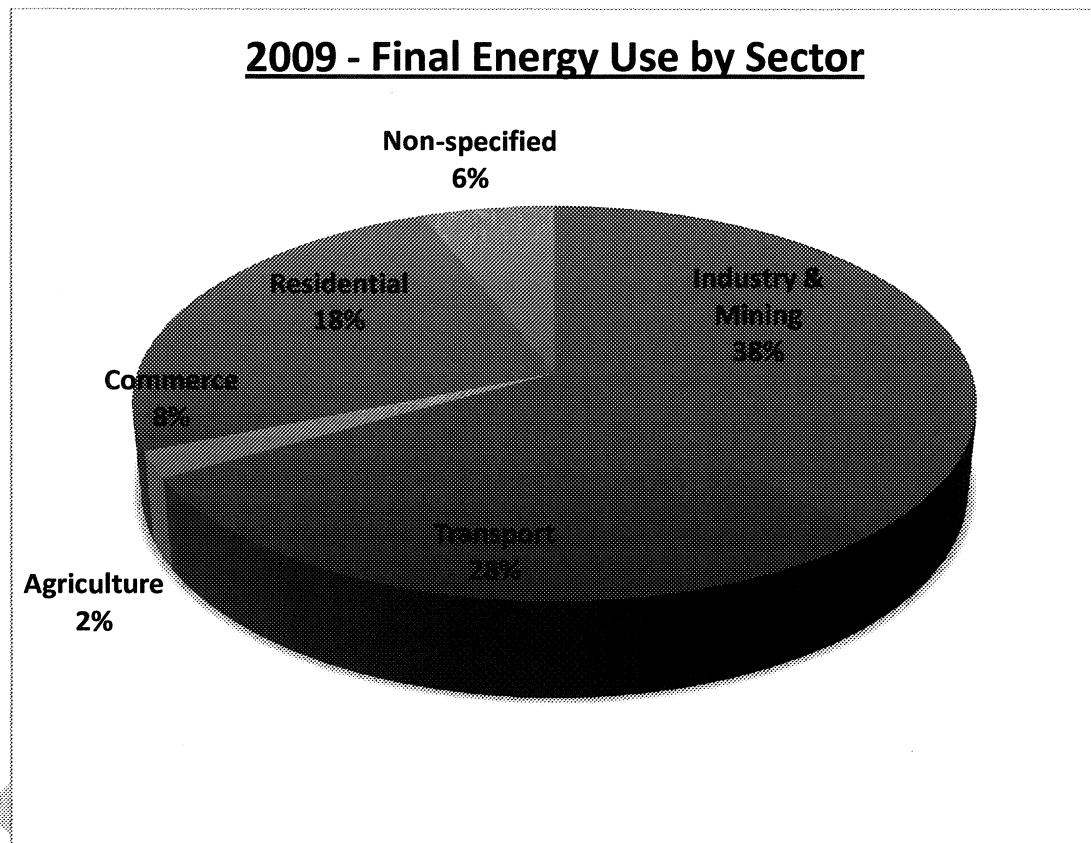


Figure 4 2009 Final Energy Use by Sector (to nearest whole number). Source: DoE Energy Balances

Figure 5 below, also refers to 2009 and illustrates the split of final energy use by each individual energy carrier. It is of significance to the national Balance of Payments that the largest of these, in energy content terms, is petroleum products. Crude oil is South Africa's single largest import, and the vast majority of the downstream products are utilised by the Transport Sector.

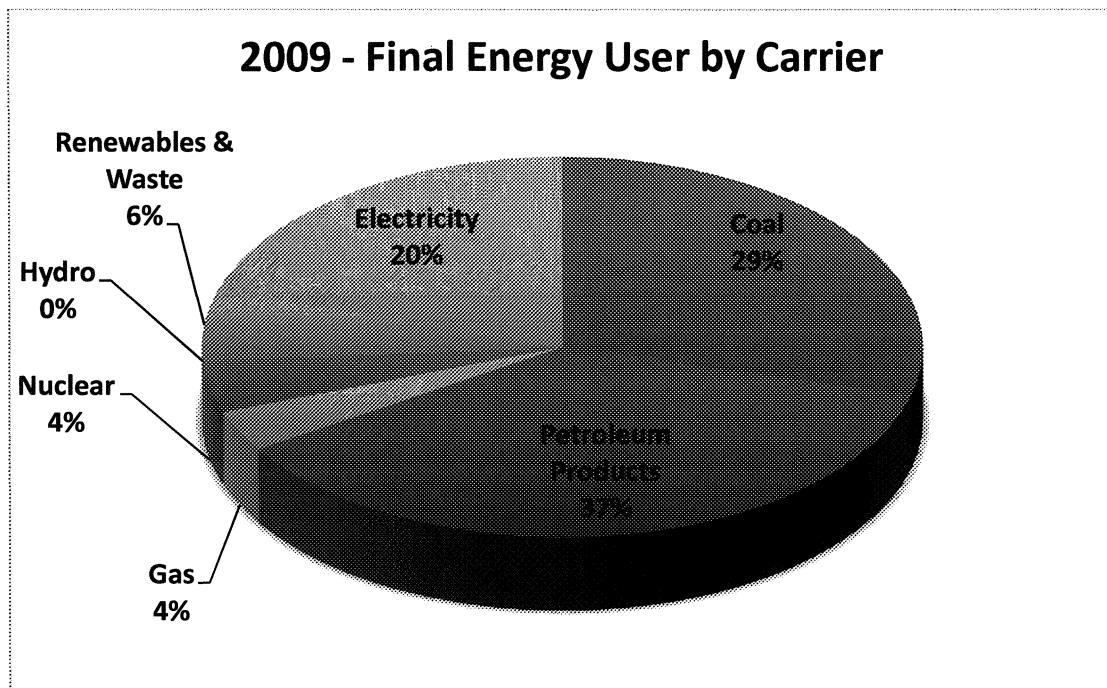


Figure 5 2009 Final Energy Use by Carrier (to nearest whole number). Source: DoE Energy Balances.

3.3 Barriers to Energy Efficiency in South Africa

The historically low unit price of coal, electricity and fuel used to be a significant barrier to energy efficiency. In earlier years the monetary value of energy savings did not drive investment in energy efficiency. There will be continual incremental increases in energy prices over the next 3-5 years, those in electricity being required to finance the expansion of electricity generating capacity.

Globally, rising incomes and population growth is driving energy needs. This places increasing pressure on supply and consequently the price of energy (in all forms). Rising (international as well as local) transport demand combined with escalating upstream costs (extraction and refining) signals the end of cheap oil. Low energy cost is a thing of the past and will no longer represent a barrier to the implementation of energy efficiency.

General awareness and understanding of the value of energy efficiency was sorely lacking in the past; again due to historically low energy costs. Various awareness-raising initiatives by Government and Eskom have increased participation in energy efficiency initiatives and these will continue. Government and Eskom will publicise energy-saving tips, energy management tools and best-practice methods, via the mass and social-media as well as various websites. The successes of Energy Management System and Energy Systems Optimization measures will be demonstrated and the results of energy audits, corporate commitment programmes and the public building sector energy efficiency implementation initiatives will be publicized.

Resistance to change, attitudes to the value of improved energy efficiency and the cost associated with the disruption of energy projects are barriers. Systematic approaches to the introduction of energy efficiency projects are expected to mitigate these costs and lessen the resistance to change. The growing value of energy efficiency in the national and international debate is also expected to help reduce these barriers.

Market conditions could be a barrier to investment in energy efficiency projects. Where this is the case, a mix of incentives, mandatory and supportive measures will be investigated by Government to help overcome these challenges.

3.4 Energy Efficiency initiatives

Significant progress has been made with a range of energy efficiency initiatives. Legislation has been promulgated and supporting regulations published.

The South African Bureau of Standards (SABS) published energy efficiency standards for electronic appliances and electric motors and the National Regulator for Compulsory Standards revised the National Building Regulations to include energy efficiency requirements for new buildings.

In 2011 the SABS adopted the International Standards Organisation Energy Management Systems Standard (ISO 50 001) as a national standard (SANS 50 001) followed by a national standard for Measurement & Verification of Energy Savings (SANS 50 010).

In 2008 SABS and NAAMSA introduced a standard for fuel consumption measuring scheme (ECE R101) for all new light motor vehicles. The label requirements include an indication of the fuel consumption of the vehicle as well as the emission levels.

National Treasury introduced a new vehicles emissions excise tax in 2010 to tax less fuel efficient vehicles. This, combined with higher crude oil costs and the high costs of new vehicles, is expected to deter vehicle owners from purchasing less fuel efficient vehicles and lead towards the greater use of public transport.

Government and other stakeholders have cooperated to produce a number of planning tools, which will provide guidance to the energy sector through to 2030.

- The Integrated Resource Plan (IRP2010) was first published in 2010, and sets out electricity generating options for the RSA for the period.
- The National Transport Master Plan was published in July 2009, leading to negotiations between Government and the Liquid Fuels Industry, and the publication of a discussion document on the review of fuel specifications and standards for South Africa and setting out Governments' view of how cleaner fuels will be introduced and how refineries will be adapted and expanded.

- The Integrated Energy Plan (IEP) is presently in development.
- Spatial planning considerations can have positive effects on longer-term energy efficiency and hence they should be required to be built into Provincial Master Plans and the Spatial Planning & Land Use Management Act.
- The publication of the Industrial Policy Action Plan (IPAP 2012/13) provides an opportunity to take stock of the progress made and challenges experienced since the commencement of the first IPAP in 2008 and includes a section on Green Industries.
- Lastly the National Climate Change Response White Paper sets out a range of measures that Government will implement, and many of these involve Energy Efficiency.

DRAFT

4 Targets

The targets presented here are taken from research and discussion documents [12] moderated by international best practice and experience.

4.1 Worldwide practice

Most developed, and many developing countries, have set comprehensive targets for energy efficiency improvements. The World Energy Assessment, published in 2000 by the UN and the World Energy Council, suggests that specific energy usage in industrialised countries could be cost-effectively reduced by 35% over a period of 20 years if effective policies are put in place. In the United States, the Electric Power Research Institute has proposed an energy efficiency improvement target of 2% per annum. The 27 nations of the European Union have adopted a target of 20% improvement in energy efficiency by 2020.

In November 2011, the International Energy Agency indicated that energy efficiency is by far the most cost effective means to reduce energy consumption, reduce Greenhouse Gas emissions and ensure security of supply.

4.2 Review of Targets

A review of the national and sector targets will continue to be undertaken during each subsequent phase of the NEES. This review will be carried out by the Department of Energy (DoE) with the objective of assessing progress towards targeted outcomes and to address any areas where additional input may be required from stakeholders.

DoE, aided by the Swiss Agency for Development and Cooperation and SANEDI, has introduced a Target Monitoring System to review progress on energy efficiency.

It is important that the targets are seen to be both *challenging* and *achievable*. In most cases the sector targets comprise a conservative estimate of the likely impact of technical interventions, Energy Management System initiatives and behavioural changes.

4.3 Industry and Mining Sector

An energy efficiency improvement of 15% by 2015

The industrial and mining sectors combined are the largest users of energy in South Africa and account for 38% of total end-user energy demand (2009). An improvement in energy efficiency of 15% is set as a target across the industries to be achieved by 2015.

A commitment to future targets has yet to be finalised and will be presented in future versions of this document after a process of engagement which will include sector players. Due to the inherent differences between the industry and mining sectors in South Africa, it

has been agreed to work on benchmarks for sectors and sub-sectors. This is because different sectors may not be able to achieve the same energy efficiency improvement.

4.4 Power Generation Sector

An energy efficiency improvement of 15% by 2015 measured by looking at usage of all equipment other than that of the thermodynamic cycle.

Renewable supply-side plants are now planned or under construction. Targets presented here do not apply to these renewable supply-side plants. However, there may be opportunities to implement energy efficiency measures with regard to the two new coal-fired plants, though by how much is not currently clear. For this reason, the strategy does not set an explicit aspirational target for these two new coal-fired power plants. Eskom is encouraged to report on any efficiency gains that may be realized as a result of construction and design choices.

It is recognised that most energy used in the generation process of existing plant is utilized in the thermodynamic cycle where heat is converted to mechanical power. The thermodynamic cycle is therefore excluded for target purposes whereas the remainder of the equipment used for power generation is considered to be identical to that of general industry. For this reason the target for the power generation sector is identical to that of industry in general.

Finally, efficiency improvement of the transmission and distribution of electricity is included in this 15% target for all of the transmission and distribution assets under the control of the power generation sector as well as for the utility companies distributing power. A 15% reduction in losses on the transmission and distribution networks is therefore targeted.

4.5 Commercial and Public Building Sector

An energy efficiency improvement of 15% by 2015

Although this sector contributes to only 8% of national energy usage (2009) the energy saving potential is known to be significant. The majority of energy used is in the form of electricity, the main end-uses being HVAC systems, lighting and office equipment.

The Commercial sector is undergoing significant growth. This presents the opportunity to capture energy efficiency at the design stage of new stock. Having said that, the energy consumption of existing building stock will exceed the energy consumption of new buildings to be constructed at least up to 2050 [19]. For this reason, it is important to focus on improving the energy efficiency of the existing stock as well.

4.6 Residential Sector

An improvement in energy efficiency per capita of 10% by 2015

The residential sector accounts for 18% (2009) of final energy demand in the country. Energy efficiency improvement initiatives should include all economically viable measures. The growth in energy demand in the residential sector is well above the population growth rate. The residential sector is also responsible for a significant portion of the peak demand.

The measures outlined in this document include mandatory building standards, appliance labelling, efficient lighting coupled with an excise duty and eventual ban on incandescent lamps, as well as subsidies for solar and heat-pump water heating. The implementation of these measures should achieve the goals proposed.

4.7 Transport Sector

An energy efficiency improvement of 10% by 2015

Transport is the second largest sectoral consumer of energy (28% in 2009) and is expected to grow considerably in the medium-term. Measures to address energy efficiency will not be easy to implement, as has been the experience internationally in countries where light motor vehicles have become the main means of transport. Significant savings will, it is predicted, only begin to be realised after a significant period of time.

All car manufacturers have made improved fuel efficiency an objective. Electronic fuel management systems have required cleaner (Euro Class 2) fuels with the effect of improving fuel efficiency in all new vehicles since 2006. As newer vehicles begin to form the majority of the RSA "car pool", the average fuel efficiency of passenger vehicles is improving. However this technology upgrade has not reached the majority of the taxi fleet.

Government and the refining industry have agreed to implement Euro Class 4 fuels with a phased programme of refinery conversions to be implemented in the period 2016 to 2020. This is necessary for the introduction of the future generation of fuel efficient vehicles. Technology improvement embracing hybrid vehicles and eventually electric vehicles may significantly change the mix of liquid fuels to electrically powered vehicles.

The impact of the specific excise tax on passenger vehicle carbon emissions, added to the purchase price of larger passenger vehicles, including 4x4's and Sport Utility Vehicles. This may influence the trend towards fuel efficient vehicles in the longer term.

4.8 Total Final Energy Efficiency targets

This Strategy proposes the following Energy Efficiency target for South Africa:

An Energy Intensity Reduction target of 12% by 2015

The target stated above is expressed as an Energy Intensity reduction. As mentioned above, the reader must keep in mind that an *improvement* in energy efficiency leads to a *reduction* in energy intensity.

The measure of Energy Intensity at any point in time is the ratio of Actual Energy Usage per Rand of Gross Domestic Product.

The target Energy Intensity reduction is the percentage by which the Business-as-usual forecast (the year 2000 energy usage projected at the actual rate of increase of GDP over the period without any additional efficiency interventions) exceeds or might be reduced to align with Actual Energy Usage.

5 Implementing Instruments

5.1 General Principles

Energy users benefit directly from energy efficiency savings after the implementation of energy efficiency measures. For this reason, actions taken will be primarily by end-users, Funding forthcoming from. Government will facilitate and encourage the adoption of energy efficiency practices by creating an enabling environment through the use of:

- Standards, Policies and Regulation Mechanisms,
- Financial instruments,
- Support measures and
- Voluntary schemes

5.2 Standards, Policy and Regulation Mechanisms

The mandate to govern and undertake energy efficiency initiatives is derived principally from the following documents:

- The National Energy Act of 2008;
- The White Paper on Energy Policy, 1998;
- The Electricity Act No. 41 of 1987 (as amended);
- The Standards Act of 2008;
- The Electricity Regulation Act

Energy Efficiency standards have been successfully applied worldwide and have brought about significant improvements in efficiencies in buildings, appliances and in management practices. South Africa's standards and codes of practice are systematically amended by SABS Technical Committees to include energy efficiency and sustainability aspects. In addition new standards are being developed. Government will apply such standards either on a voluntary or mandatory basis depending on the circumstances. For instance:

- The National Building Regulations have been amended to include a specific requirement for energy efficiency in new buildings (SANS10400XA). The National Regulator for Compulsory Specifications is responsible for its enforcement.
- Standards for energy labelling of appliances are an internationally tried and tested tool to build an awareness of energy efficiency among consumers. Government will introduce mandatory labelling of some domestic appliances in 2013 (SANS 941).
- The adoption of European Union standards for appliance labelling for the RSA has been approved for a number of technologies in SANS 60043.

- The energy efficiency (fuel economy) labelling of new light motor vehicles requires mandatory disclosure under compulsory specification 30917 (2008).
- Energy Management Systems formalise the monitoring, evaluating and targeting of energy consumption within industrial and commercial applications. The concept of energy management must also embody other key areas, including Training, Motivation and Awareness, in order to address the organisational and behavioural aspects, as well as the technical components of an effective Energy Management System. SANS 50 001 (ISO 50 001) was adopted and published in 2011 by SABS.
- The use of SANS 50 010 (Measurement and Verification of Energy Savings) will be encouraged as the basis to evaluate the performance of projects and programmes. The use of SANS 50 010 will be necessary in order to claim 12L tax rebates for energy efficiency savings. – see section 5.3.1.
- The DoE promulgated the Regulations for Mandatory Provision of Energy Data in March 2012 under the National Energy Act (2008).

In cases where accreditation of practitioners or compliance of entities against a standard is required, this will be undertaken by the South African National Accreditation System, which will develop the necessary accreditation standards.

Government will call for the development and implementation of standards as and when required in order to create an enabling environment for the adoption of energy efficiency.

In order to bring the existing stock of buildings up to a level of energy efficiency comparable with that of new buildings, Government will introduce Energy Performance Certificates, as is the case internationally to ensure energy efficient practices are employed in buildings. Initially this will be for public buildings.

Steps have been taken to improve electrical energy systems operations;

Steps have been taken to improve electrical energy systems operations;

- Government is establishing an independent entity to be known as the System Operator. This entity will manage the prioritisation of electrical energy generating capacity and purchase power from Independent Power Producers. Eskom may undertake preparatory work towards the transfer of the assets to the new body, entailing among other things, ring-fencing of activities.
- Regulations have been published which place the onus on regional electricity distributors to be in a position to be able to switch off excessive power using appliances and equipment, in order to assist the System Operator to maintain the stability of the National Electricity Grid.

5.3 Financial Instruments

The strategy will need to be supported with the necessary funding from Government to provide incentives to stimulate the accelerated uptake of energy efficiency.

5.3.1 Incentives

- Government has introduced allowances for energy efficiency via Section 12I and Section 12L of the Income Tax Act of 1962.
 - Section 12I allows for a maximum of 55% on 'Preferred Status' projects and 35% on 'Qualifying Status' projects, as determined by the allocation of points on the Department of Trade and Industry's 10-point rating system, which include points for energy efficiency.
 - Section 12L provides an allowance for energy savings achieved through energy efficiency in any activity from year to year. The energy savings claimed according to 12L should be Measured and Verified by a SANAS accredited M&V body using the methodology presented in SANS 50 010.
- NERSA approved R 6.2 billion in the Current Multi-Year Price Determination (MYPD 2) to be utilized for Demand Side Management (DSM) programme through Eskom and electricity distributors. These funds are available to assist electricity consumers to reduce their consumption through installation of energy efficiency interventions. As per the provision of MYPD process, a proposal to continue with the allocation of the DSM programme in the MYPD 3 has been factored in the Eskom application submitted to NERSA for approval.
- The Department of Trade and Industry R 5.75 billion Manufacturing Competitive Enhancement Programme (MCEP) aims to support manufacturing enterprises to upgrade their plant, create jobs, increase their competitiveness and support the value-add process as well as help companies invest in "Green Technology". This programme started accepting applications as from the 4th of June 2012.

5.3.2 Excise Taxes

- Light motor vehicles (excluding light utility vehicles) are now subject to an ad valorem excise tax for double cabs, of R75/gCO₂ above 120gCO₂/km and R100/gCO₂ above 175 gCO₂/km which is imposed in proportion to the tested and certified exhaust emission measured in grams per kilometre. The purpose of this excise tax is to encourage fuel efficient vehicle purchases. In the long-term, as the national car fleet is modernised, newer and more fuel efficient vehicles will predominate and the overall national fleet will reduce its fuel usage.

5.3.3 Carbon Taxes and abatement mechanisms

Carbon taxes have been raised in many developed economies of the world, most recently in Australia.

In South Africa, a policy paper on carbon taxes has been circulated for consultation with the intention to introduce a tax.

5.3.4 Financing the Public Sector Implementation Plan

The public sector implementation plan is intended to bring energy efficiency to the government infrastructure stock (including building stock and public lighting). In the past, some cost effective capital measures in the Public Sector remained unimplemented because there were insufficient budgets to cater for them.

- National Treasury has approved R 600 million in the current MTEF for the implementation of energy efficiency measures in the Municipal Infrastructure. The allocation for 2011/12 was R 280 million.

5.3.5 Financing Installation of Solar Water Heaters

Background

- National Treasury has approved R 4.7 billion in the current MTEF for the installation of Solar Water Heaters in the residential sector.

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5.3.6 iClean Development Mechanism

The Clean Development Mechanism (CDM) provides opportunities for developed countries to invest in low-cost abatement opportunities in developing countries and receive credits for the resulting emissions reduction. Such credits would then count towards their own abatement targets. The mechanism presents an opportunity to package a number of energy efficiency projects into a program, which can generate credits.

- Government will continue to facilitate CDM applications against the current CDM period which expires at the end of 2012.
- Government will continue to facilitate CDM applications post 2012 should the mechanism be available.

5.4 Support Measures

5.4.1 Energy Efficiency agencies

The mandate given by the National Energy Act and the *White Paper on Energy Policy* requires that the Department of Energy should promote energy efficiency through various means including the establishment of agencies for the coordination, leadership and sector capacity development for the implementation of energy efficiency.

- Accordingly the Department of Energy will ensure that the South African National Energy Development Institute is funded to undertake its responsibilities.

5.4.2 Energy Service markets

The Energy Service Company (ESCO) concept has contributed to the rapid uptake in energy efficiency in the U.S.A. energy market. The ESCo market development has been slower in South Africa but it is developing with the advent of higher electricity pricing and innovative approaches from the Eskom IDM Division.

A well-established performance standard and benchmarking system linked to certification, would give the customers of ESCos greater confidence in the standard of service being provided. There may be a place in the market for a system of service provider accreditation.

- Department of Energy's role in respect of ESCos will be primarily devoted to addressing the skills deficit, and by creating a more formal framework within which ESCo services are provided, particularly for Government Projects.
- Within this structure ESCos would be able to obtain skills, training and accreditation.
- Furthermore, approved methodologies for energy efficiency audits and performance standards for particular technologies will be investigated.

It is accepted that the ESCo model has an important role to play in the delivery of energy management services in South Africa. There is therefore merit in supporting and strengthening this service delivery mode, given the potential to achieve energy savings at minimum cost to the Fiscus.

5.4.3 Certification and Accreditation

This strategy includes the use of a number of standards against which compliance will need to be measured. Implementation of management standards may require certification and measurements may require verification.

- In cases where accreditation of auditors is required, this will be undertaken by the South African National Accreditation System (SANAS), which will develop the necessary accreditation standards.

5.4.4 Education, Information and Awareness

By communicating the successes of demonstration programmes, and energy audits, by publicising corporate commitment programmes, and by giving prominence to the public building sector energy efficiency implementation initiatives, the educational challenge will be addressed.

- Government has launched an Energy Efficiency Campaign Strategy which will, amongst others, publicise energy-saving tips, energy management tools and best practice methods. This will be done via the mass media, and the use of websites.
- The Department of Energy will engage with the Department(s) of Education with regard to the inclusion of appropriate energy efficiency education programmes in the various curricula under the auspices of the National Qualification Framework (NQF).
- Knowledge of Energy Efficiency is to become a competence requirement under the National Qualifications Framework training programmes for skilled workers in the relevant construction and buildings services trades.

5.4.5 Initiatives, Projects and Programmes

Government will support and encourage the implementation of technical and financial aid programmes to increase energy efficiency, some examples of which are listed below:

- Industrial Energy Efficiency Improvement project, South Africa.
- Energy Efficiency Target Monitoring System (EETMS).
- South African Germany Energy Project (SAGEN).

5.4.6 Research and Technology

Technology options hold significant potential for energy efficiency improvements and in most instances these are well researched and developed. The local manufacture of energy efficient products represents an opportunity to create local jobs.

- SANEDI will be funded by DoE to carry out a dedicated programme of research and development for energy efficiency. The programme aims at the research and adaptation of technologies and processes to local requirements and manufacture. The Department of Science and Technology will continue to provide assistance in this regard.

5.5 Voluntary Mechanisms

5.5.1 Voluntary agreements

Voluntary agreements between organised business and Government are important in raising awareness of the need for energy efficiency and sharing of best practice amongst members. In this regard, Government will pursue such partnerships, particularly with energy intensive sectors.

- The Green Economy Accord includes the establishment of a voluntary initiative by energy users in a range of economic sectors.
- The Energy Efficiency Leadership Network pledge was signed at COP 17, with the purpose of supporting the National Energy Efficiency Strategy. This is underpinned by the pledges signed between individual companies and the Minister of Energy. Activities at company level will include:
 - Development of a road map for improved energy efficiency, supported by the implementation of an energy management system towards the objectives of the National Energy Efficiency Strategy;
 - Development of internal energy efficiency targets appropriate to company operations that also respond to Government policy and strategy;
 - Reporting publically on progress towards company energy efficiency targets and the energy intensity of operations;
- The Industrial Energy Efficiency Improvement project implementation plan is also designed to publicise and implement ISO50001.
- In most mature economies energy audits have been used across all sectors to identify efficiency measures that can be implemented in a cost-effective manner. Energy audits will be promoted as a means of improving efficiency.
- For new buildings, the Green Star rating tools of the Green Building Council of South Africa (GBCSA) are available. As part of its mandate to develop and promote best practices in the construction industry, the Construction Industry Development Board has gazetted the use of the Green Star South Africa- Office Version 1 as a best practice to be followed in the design of office buildings.

6 Strategic Implementation Outline

Strategic focus areas for the various sectors are presented below. The intention is to work on these strategic focus areas over the next 3 years.

These focus areas are not intended to be prescriptive but are provided to establish a platform for action by the relevant stakeholders in the various sectors.

An indication is also given of possible support measures that are available – these support measures will be used as appropriate in the various sectors. Where gaps in support measures are identified, additional measures may be developed.

6.1 Industry and Mining Sector Outline

At this stage, industrial (including manufacturing) and mining sectors are combined since the focus areas are the same. However, as discussed earlier, the intention is to develop separate implementation outlines for the two sectors in future revisions of the NEES.

6.1.1. Objectives

- To decouple the rate of growth of industrial and mining energy consumption from the rate of growth in industrial and mining output.
- To bring the energy efficiency of major industrial and mining operations in South Africa into-line with international standards and best-practice.

6.1.2. Approach

A mixture of voluntary and mandatory instruments will be implemented.

Industry leaders in this sector have signed a pledge with the Department of Energy to work together to implement the NEES. The strategic focus areas identified for this sector are intended to build capacity in the area of energy management and best practice, and support replication nationwide.

Sharing successful interventions by leadership demonstration projects will form an integral part of this action plan.

Energy Audits will be carried out supported by the dti through the National Cleaner Production Centre (NCPC).

Training in energy management systems (ISO50001) and Energy Systems Optimization is also being undertaken with support from UNIDO in conjunction with the dti.

A series of mandatory equipment standards will be investigated.

The introduction of energy management plans for certain users and the development of sector and subsector energy intensity benchmarks will also be explored.

More detail on these and other strategic focus areas are presented in the table below.

Table 1 Strategic Implementation Outline - Industry and Mining Sectors

Strategic Implementation Outline – Industry and Mining Sectors				
Strategic Focus Area	Support Measures	Duration	Responsibilities	Notes
Review of policy and regulatory-related barriers to the implementation of industrial energy efficiency technologies and measures				
Establish regulatory framework on energy management plans and audits.		2014/2015	DoE	
Financial and Tax Incentives for Energy Efficiency				
NERSA has provided R6.2 billion for Eskom and electricity distributors. These funds are available via a number of programs to assist customers in reducing electricity usage. Implementation of the 12L tax incentive scheme.	Eskom IDM department provides the following mechanisms to access funding: • DSM model • Performance contracting model • Standard offer model SANS 50010 (Measurement and Verification of Energy Savings) is in place SANAS developed and implemented a system of accreditation for M&V bodies. Upgrade Grant in MCEP for companies investing in Green Technology	On-going	Eskom IDM	This funding model is working well and is extensively used by the Industrial and Mining sectors. The DoE will continue to monitor the success of this program and will flag any potential problem areas. Tax payers with trading operations eligible for tax allowance on energy efficiency savings Measured and Verified by SANAS accredited bodies. Scheme roll out 2012. This programme will accept applications from the 4th of June 2012.
DTI R5.75 billion Manufacturing Competitive Enhancement Programme		2012/2013	the dti	
Norms and Standards: Investigate the need for and develop where appropriate, technical Norms and Standards;				
Codes of practice for using and maintaining boilers.	The tax allowance on energy efficiency savings will drive adoption of standards.	2012 / 2013	the dti through SABS DoE	
Development of standards for optimising industrial energy systems.	International Bilateral Agreement. Training programmes.			
Development of standard on Net GHG effect of fuel switching and own generation using various fuel sources	SANS 50010	2013/2015	SABS, the dti, DoE	There is a need to establish a clear and consistent methodology to evaluate the GHG impact arising from fuel switching and own generation
Implement awareness raising campaigns for new standards	SABS publicity programme The Energy Efficiency Campaign (DoE)	On-going	the dti through SABS, UNIDO DoE	To commence in 2012.
Encourage and promote the adoption of Energy Audits as a means to improve Energy Efficiency				

Strategic Implementation Outline – Industry and Mining Sectors				
Strategic Focus Area	Support Measures	Duration	Responsibilities	Notes
Promotion of Energy Audits as best practice to identify EE opportunities. Energy Audits by the NCP.	Regulatory framework on energy management plans and audits. NCP Industrial Energy Efficiency Project The Energy Efficiency Campaign (DoE)	2014/2015	DoE	Increased awareness regarding potential benefits needs to be created.
Investigate the need for a system of recognition for suitably qualified energy auditors and energy managers.	Existing and new skills development programs Accreditation and qualification bodies: SANAS, SAQA, ECSA, etc.	On-going	NCP, UNIDO, DoE	The NCP has performed cleaner production audits for the past 2 years and will be encouraged via the Industrial Energy Efficiency Improvement Project.
		2013/2014	DoE w.r.t the investigation SANAS w.r.t. development of a system of recognition.	Training/skills development programmes available from a range of providers but no formal system. A South African system of recognition may help develop this market.
Encourage and promote Energy Management Planning				
Identify appropriate industry subsectors. Thresholds established to guide prioritisation of energy management plans for companies		2012 / 2013	DoE the dti, Industry stakeholders, UNIDO,	Energy Management plans and targets applied to identified industry subsectors and most suitable candidates for Energy Efficiency activities selected.
Guidelines for energy management plans at company level.		2012 / 2013	the dti through UNIDO DoE	Guidelines corresponding to standards like ISO 50 001/SANS 50 001.
Encourage and promote the introduction of Energy Management Plans in prioritised sectors.	Guidelines for energy management plans at company level. SABS publicity programme	2012 / 2013	DoE the dti through SABS	
Encourage and promote the adoption of Energy Management System Standards				
Promote application of ISO 50001	Training programmes to support implementation of ISO 50 001/SANS 50 001. SABS publicity programme The Energy Efficiency Campaign (DoE)	2012 / 2013	the dti through SABS, UNIDO DoE, Industry stakeholders	Energy Management Planning requires implementation of a Management System like ISO 50 001. The IEE project provides training on EnMS and Energy optimisation of systems.
Promotion of Energy Service Companies (ESCs)				
Explore the potential to strengthen the role of ESCOs in EEDSM programmes.	The Energy Efficiency Campaign (DoE)	2012 / 2013	DoE, SANEDI, Eskom IDM, NERSA, the ESCO industry	
Energy efficiency performance monitoring				

Strategic Implementation Outline – Industry and Mining Sectors				
Strategic Focus Area	Support Measures	Duration	Responsibilities	Notes
Develop energy efficiency target monitoring programme to measure performance, including appropriate energy efficiency indicators.	National energy efficiency target monitoring system (EETMS).	2012-2013	DoE SDC, SANEDI, and data provider stakeholders.	DoE monitoring project in progress

6.2 Commercial and Public Buildings Sector Outline

6.2.1 Objectives

- To demonstrate Government's commitment to sustainable energy development within its own building stock;
- To progressively upgrade the energy performance of existing public and commercial building stock;
- To achieve best practice energy performance in new public and commercial building stock.

6.2.2 Approach

A mixture of voluntary and mandatory instruments will be implemented.

Sharing successful interventions by leadership demonstration projects will form an integral part of this action plan, this will include sharing the results of the introduction of energy efficient technologies.

Revised building regulations (SANS10400XA) for new buildings will be implemented.

Adoption of voluntary performance rating systems for existing buildings will be encouraged.

Energy audits and the adoption of the ISO/SANS 50 001 energy management system will be encouraged.

Energy Performance Certificates will be introduced in the Public Building Sector.

More detail on these and other strategic focus areas are presented in the table below.

Table 2 Strategic Implementation Outline – Commercial and Public Buildings Sector

Strategic Implementation Outline - Commercial and Public Buildings Sector				
Strategic Focus Area	Support Measures	Duration	Responsibilities	Notes
Review of policy, regulatory-related and/or legal barriers to the implementation of energy efficiency in commercial buildings				
Introduction of Energy Efficiency Standards for Buildings				
Implement the National Building regulation including minimum energy efficiency standards	Training of building inspectors and control officers, plumbing and construction industries	On-going	NRCS the dti, SDC, DoE	
Publish Energy Usage Standards for Buildings (SANS10400XA) in support of the regulations.		2012-2013	SABS, NRCS, the dti,	This has been implemented
Develop awareness programme to support implementation of the regulations developed	SABS publicity programme Incorporate in The Energy Efficiency Campaign (DoE)	2012-2013	SABS, DoE	
Encourage application of the Green Buildings star rating system in existing buildings.		2012/2013	Green Buildings Council of South Africa DPW	Under development by the Green Buildings Council of South Africa for a range of building occupancies.
Land Use Zoning				
Permit commercial development closer to residential areas to reduce energy used in commuting.	None needed, only legislation directives	2012 / 2013	COGTA local authorities, DoE, the dti	
Encourage and promote Energy Audits for Commercial Buildings				
Promotion of energy audits to identify EE opportunities.	The Energy Efficiency Campaign (DoE)	2012 / 2013	DoE	Increased awareness regarding potential benefits needs to be created.

Strategic Implementation Outline - Commercial and Public Buildings Sector				
Strategic Focus Area	Support Measures	Duration	Responsibilities	Notes
Investigate the need for a system of recognition for qualified energy auditors and energy managers.	Existing and new Skills development programs Accreditation and qualification bodies: SANAS, SAQA, ECSA, etc.	2012 / 2013	DoE w.r.t the investigation of a system of recognition. SAQA, ECSA,	There are a number of training courses and skills development programmes available from a range of providers but at present there is no formal system of recognition. A South African system of recognition may help develop this market
Identify/train/certify both trainer and trainee auditors (BEE).		2012 / 2013	DoE Eskom, IDM	
Encourage and promote the adoption of Energy Management System Standards				
Promote the implementation of ISO 50 001	Training programmes to support the implementation of ISO 50 001. The Energy Efficiency Campaign (DoE)	2012 / 2013	DoE the dti through UNIDO, Industry stakeholders	Energy Management requires the implementation of a management system like ISO/SANS 50 001. The Industrial EE project (UNIDO) provides training on EnMS..
Promotion of Energy Service Companies (ESCOs)				
Explore potential to strengthen the role of ESCOs in EEDSM programmes.	The Energy Efficiency Campaign (DoE)	2012 / 2013	DoE SANEDI, Eskom, IDM, NERSA, the ESCO industry	
Energy efficiency performance monitoring				
Develop energy efficiency monitoring programme to measure performance, including appropriate energy efficiency indicators.	Introduction of national energy consumption data management system.	2012-2013	DoE Supported by: SANEDI, SDC and data provider stakeholders.	DOE monitoring project in progress

6.3 Residential Sector Outline

6.3.1 Objectives

- To enforce standards of energy efficiency in housing, including for those for hot water heating systems.
- To introduce state-of-the-art technologies with labelling/efficiency standards for household appliances

6.3.2 Approach

A mixture of voluntary and mandatory instruments will be implemented.

Mandatory energy requirements in new homes will be introduced through the revised building regulations - the National Building Regulations have been amended to require a minimum standard of sustainability in new buildings in the RSA. SANS10400XA has been developed for minimum requirements of energy usage in buildings, and is supported by SANS204.

Support will be provided for solar and heat-pump hot water systems.

Labelling/efficiency standards for household appliances will be introduced.

Awareness campaigns will be launched to make consumers more aware of the benefits of energy efficient appliances and technologies.

More detail on these and other strategic focus areas are presented in the table below.

Table 3 Strategic Implementation Outline - Residential Sector

Strategic Implementation Outline – Residential Sector				
Strategic Focus Area	Support Measures	Duration	Responsibilities	Notes
Standards for Residential Construction				
Implementation of SANS 10400XA for energy efficient housing.	SANS 10400XA	2012 / 2013	NCSR SABS, Building industry, DoE	Completed
Amendment of National Building Regulations		2012 / 2013	the dti SABS, Building industry, DoE	Completed
Support of Solar & Heat Pump Water Heating.	Eskom IDM	On-going	Eskom IDM DoE, NERSA	
Give publicity to regulations	The Energy Efficiency Campaign (DoE)	2012 / 2013	DoE NT, the dti	
Appliance labelling				
Establish mandatory standards and labels for household appliances. Publicise labelling Monitor progress		On-going	DoE GEF/UNDP, SECO, SABS, NRCS Eskom, Appliance Manufacturers, retailers, service industry	Standards under development
Energy Usage & Comfort Awareness Raising Programme				
Raise awareness of benefits of solar & heat pumps, thermal insulation in ceilings and energy efficiency.	The Energy Efficiency Campaign (DoE)	On-going	DoE Eskom DSM, GCIS, DPE	
Implementation in all housing sectors, particularly sub-economic housing via provincial and municipal contributions.		2013 / 2014	Department of Human Settlements, NCSR Provincial Housing Departments,	
Efficient Lighting Programme				
Implementation in all sectors. Phase out of incandescent lighting. Monitoring.		On-going	NRCS DoE, Eskom, DPW, Municipalities,	

6.4 Transport Sector Outline

6.4.1 Core Objectives

Public Transport

- Achieve a modal shift in passenger transport from low-capacity mini-bus taxi and private vehicles to higher efficiency bus and rail systems.
- Increase use of non-motorised transport modes such as cycling and walking to relieve congestion in urban areas and provide low-cost mobility in rural areas.

Travel Demand Management

- Reduce the number of trips made by motorized transport.

Freight transport

- Increased modal efficiency in the distribution of freight transport between road and rail.

Urban form

- Redress South Africa's spatially dispersed and segregated pattern of urban development.

Fuel efficient vehicles

- Increased efficiency of current vehicle technologies
- Implementation of alternative fuels and propulsion systems

Traffic management

- Reduce congestion in urban areas

6.4.2 Approach

A mixture of voluntary and mandatory instruments will be implemented.

Public transport systems will be integrated and improved.

Traffic flow will be improved through a combination of demand management, shifting to public transport and optimization of urban traffic control systems.

Awareness campaigns will be launched to make consumers more aware of the benefits of energy efficient transport technologies.

Mandatory requirements for labelling of new vehicles and possibly emission standards will be introduced.

More detail on these and other strategic focus areas are presented in the table below.

Table 4 Strategic Implementation Outline - Transport Sector

Strategic Implementation Outline – Transport Sector				
Strategic Focus Area	Support Measures	Duration	Responsibilities	Notes
Public Transport				
Implementation of the “Public Transport Strategy and Action Plan” (2007)	Passenger Transport Management policy and regulatory/incentive dispensation. Regulations and necessary fiscal/budgetary reform	Ongoing	NDot, NT, Local Government	
Support Designated Planning Authorities at Municipal Level	Capacity building and support to local government structures.	2012/2013	NDot, DoE, Local Government	Ensure compliance by Municipalities with the requirements of the National Land Transport Act (2009)
Integration of urban road, rail and non-motorised transport into Integrated Rapid Public Transport Networks (IRPTN's)	Financial support through the Public Transport Infrastructure and Systems Grant	Ongoing	Local Government, NDot, NT	Implementation of IRPTN's in 12 cities
Upgrading of urban bus and minibus services to Bus Rapid Transit	Financial support through the Public Transport Infrastructure and Systems Grant	Ongoing	Local Government, NDot, NT	BRT, or other improved bus systems, will form a component of the IRPTN's
Upgrading of commuter rail rolling stock and infrastructure on priority rail corridors to Rapid Rail level of quality	Accelerated Rolling Stock Programme Signalling upgrade programme Station Upgrade & improvement programme Preventative maintenance programme	Ongoing	Passenger Rail Agency of South Africa (PRASA), Metrorail NDot	

Strategic Implementation Outline – Transport Sector				
Strategic Focus Area	Support Measures	Duration	Responsibilities	Notes
Implementation of pedestrian and cycle infrastructure to support improved public transport		Ongoing	Local Government, NDoT	
Upgrading Long-distance road and rail terminals and integration with the IRPTN's		2015 / 2016	Local Government, NDoT, NT	
Conduct research to articulate the value of energy efficiency to local transport managers and customers and use results to develop target-based performance objectives for local authorities to meet in terms of public transport provision		2012 / 2013	DoE Supported by: NDoT, Local Government	
Traffic management				
Improve traffic flow through optimizing traffic controller settings, implementation of urban traffic control systems and variable message signs		2012 / 2013	Local Government,	
Travel Demand Management				
Implementation of measures such as ride-sharing, tele-commuting / learning / shopping to reduce the need to travel		Ongoing	Local Government,	
Implementation of measures to increase usage of public transport such as park-and-ride		Ongoing	Local Government,	
Fuel efficient vehicles				

Strategic Implementation Outline – Transport Sector				
Strategic Focus Area	Support Measures	Duration	Responsibilities	Notes
Introduce differential licencing fees		2012 / 2013	NDoT, DoE, Local Government	
Development and implementation of mandatory emission standard	Emission standards for vehicles with compulsory minimum levels	2015 / 2016	NDoT	
Retesting of older vehicles and upgrades. Roadworthy test including emission test	Emission standards for vehicles with compulsory minimum levels included in roadworthy certificate. Development of training curriculum for inspectors	2020 / 2021	SABS, DoE, DEA, NAAMSA, SAPIA NDoT, DoE, Local Government	
Include transport fuel efficiency promotion in on-going fiscal reform		2012 / 2013	NT DoE, NDoT	
Fuel efficiency of vehicles should be encouraged in order that fuel efficient vehicles get to being in the majority.		2012 / 2013	DoE NDoT, STANSA, NAAMSA, SAPIA	
Mandatory fleet audits for operators stressing regular vehicle maintenance and testing of vehicle emissions		2015 / 2016	NDoT DoE, STANSA	
Regulations, standards and codes of practice which stimulate the supply of energy efficient vehicle technologies		2012 / 2013	DoE NDoT, STANSA, NAAMSA, SAPIA	
Public information programmes that sensitise the motoring public to the benefits of efficiency measures		2012 / 2013	DoE NDoT, STANSA, NAAMSA, SAPIA	
Large fleet owners to audit, measure and report to DoE	Implementation and monitoring	2015 / 2016	DoE NDoT	
Freight				
Establish policy to optimise goods transport	Goods Transport Management policy and regulatory/incentive dispensation Regulations and necessary fiscal and budgetary reform	Ongoing	NDoT, NT, DoE, Local Government	Draft National Freight Logistics Strategy (2005) to be reviewed and finalised.

Strategic Implementation Outline – Transport Sector				
Strategic Focus Area	Support Measures	Duration	Responsibilities	Notes
Advance Appropriate Mode Freight Logistics Policy		2012 / 2013	NDoT, DoE, Spoornet	
Finalise research on impacts of shifts between road and rail		2012 / 2013	NDoT, DoE, Spoornet	
Audit EE of goods moved via range of freight modes		2012 / 2013	NDoT, DoE, Spoornet	
Explore implementation of an energy efficiency levy on freight movements consistent with energy impacts		2012 / 2013	NDoT, DoE, Spoornet	
Investigate cost-recovery mechanisms related to road freight and improved enforcement of overloading regulations		2012 / 2013	NDoT, DoE, Spoornet	
Study regenerative braking systems on electric locomotives. Possibly implement regenerative braking requirement on larger freight vehicles		2012 / 2013	DoE, NDoT	
Run pilot project to detail cost-benefits of bio-fuel mixes to road freight sector		2012 / 2013	DST, NDoT, DoE, Spoornet	
Ensure inclusion of energy efficiency criteria in the capital investment plan.		2015 / 2016	NDoT, DoE, Spoornet	
Establish intelligent transportation System data management	Establish ITS forum with key stakeholders in freight sector	2012 / 2013	NDoT	
Urban form				
Promote compact urban form and integration of job opportunities, living areas and public facilities by implementation of appropriate policies.		2012 / 2013	NDoT, the dti, Local Government, DoE	

7 Performance Monitoring and Future Review

7.1 Performance Monitoring

Government recognises the need to establish a system for continuous updating and reporting of energy intensity data.

Government will ensure that the necessary resources are made available to establish structures, systems and legislation to facilitate the specification, collection, storage, maintenance and supply of energy data, and energy-related data, according to the requirements of integrated energy planning and international standards.”

The Department of Energy will establish such a monitoring and verification system and ensure that it is implemented.

In this regard the Energy Act (2008) will be used to implement regulations on the management, measurement and reporting of energy efficiency.

7.2 Future Review

The Government will manage a process of regular Strategy review. In this process the specified outcomes and impacts of the Strategy will be assessed and the achievement of the goals monitored. Suitable evaluation metrics for each sector will be developed, in conjunction with that sector, to assess the progress. It is anticipated that the next review will take place in 2015.

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