



The Energy Efficiency Accord
National Business Initiative/South Africa

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Summary

The National Energy Efficiency Accord was signed on 4th May 2005 by 31 South African companies and business organisations. The objective of the Accord was to create a voluntary initiative which would permit South African businesses to develop a coherent and effective strategy for meeting the targets set out in the National Energy Efficiency Strategy (NEES) of reducing final energy demand by 15% by 2015. The Accord has since attracted an additional 6 signatories and is supported by a Technical Committee of signatories that has prepared a measurement and verification (M & V) guideline based on the International Performance Measurement and Verification Protocol.

End-user area

- New buildings
- Refurbishment of buildings
- Transport and mobility
- Financial instruments
- Industry
- Legal initiatives (municipal regulations, directives, etc)
- Planning issues
- Sustainable communities
- User behaviour
- Education
- Other

Target Audience

- Citizens
- Households
- Property owners
- Schools and universities
- Decision makers
- Local and regional authorities
- Transport companies
- Utilities
- ESCOs
- Architects and engineers
- Financial institutions
- Other

Technical

- Energy efficiency
- Heating
- Cooling
- Appliances
- Lighting
- CHP
- District Heating
- Solar energy
- Biomass
- Wind
- Geothermal
- Hydro power
- Other

Introduction

South Africa's commercial, industrial and mining sectors accounted for approximately 51% of the country's final energy use in 2000. The supply of energy to the country is also extremely coal-intensive (79% of primary supply), making South Africa one of the highest per capita emitters of greenhouse gases in the world and contributing significantly to local atmospheric pollution.

Figure 1. 2000 Primary Energy Supply

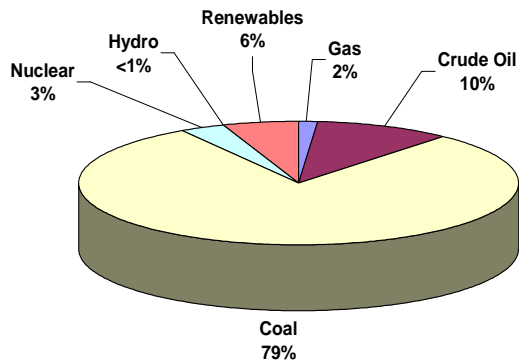
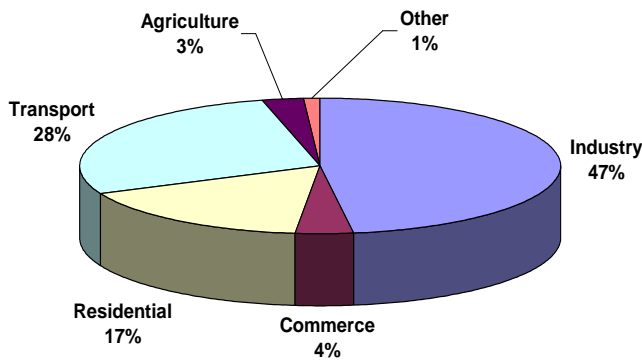


Figure 2. 2000 Final Energy Use by Sector



The National Energy Efficiency Strategy (NEES), launched by the Department of Minerals & Energy in 2005, called for an overall 12% reduction in final energy use by 2015, and a 15% reduction for the industrial (including mining) and commercial sectors.

To achieve a coordinated and effective implementation of the NEES targets, a South African business organisation-- the National Business Initiative (NBI)—facilitated the Energy Efficiency Accord. The NBI is a coalition of 140 leading South African and international companies, dedicated to finding solutions for sustainable development, economic growth and environmental protection.

The initial concept of the Accord was raised during a series of workshops and reports supported by the Canadian-funded CBLA Project in collaboration with NBI. CBLA provided a roadmap and set of guidelines for implementing voluntary programmes in South Africa, demonstrating the value of voluntary approaches to energy efficiency through the example of the model of the Canadian Industry Programme in Energy Conservation, a programme which has succeeded in improving energy intensity in Canadian industry by an average of 2% per annum over nearly 30 years.

The primary motivation for the Accord was the realisation on the part of business that achieving a 15% reduction in final energy demand—the target identified for the industrial and commercial sectors in the 2005 National Energy Efficiency Strategy (NEES)—would be impossible without a coordinated and voluntary effort. The need for such voluntary initiatives had in fact already been mentioned in the NEES, which called for “encouragement of business-led, voluntary initiatives to improve energy efficiency.”

The final version of the Accord was developed over a period of several months, with active participation by both Business Unity South Africa and the national Department of Minerals and Energy. The final document was developed for signing in May 2005, following an intensive polling of potential signatories by NBI staff.

Objectives

The objectives of the Accord were:

- to collaborate to establish a mutually beneficial framework for voluntary energy efficiency initiatives that will help move the country towards its goals of attracting investment in Clean Development Mechanism (CDM) projects and efficient energy use, (and)
- to work together to establish a programme that individual industry associations and companies will be able to join voluntarily.

The Accord was therefore a commitment between government and industry to support the NEES' recognition of the value of voluntary initiatives. The developers of the Accord agreed that “energy efficiency commitments should not be seen in isolation of the national imperatives of increased investment, economic growth and job creation or the business drivers of efficiency, competitiveness and safety standards.”

Methodologies

At the outset, the Accord was little more than an agreement to meet the NEES targets, and lacked a formal methodology or programme. However the document did specify a number of related commitments which provided a guideline for the eventual development of the programme. For example, signatories agreed to

- promote the use of Demand Side Management contracts...towards achievement of the above target;
- develop common reporting requirements for energy usage from all energy sources, taking into account...protocols...for reporting such as those developed by the Global Reporting Initiative;
- define industry-specific projected energy use in the future, based on Business-as-usual (BAU) growth expectations;
- agree on 2000 as the baseline year against which performance will be measured;
- establish methodologies that will allow the baseline quantification for energy use/intensity (consumption per unit of production or any other relevant denominator) in various subsectors;
- take into account the need to measure specific energy intensity...rather than absolute energy use in order to promote industrial growth whilst achieving energy efficiency and recognising the energy conservation measures already in use in some subsectors;
- establish methodologies to take into account increased production so that the pursuit of improved energy efficiency does not hamper industrial growth;

- develop a generic energy auditing protocol that can be adapted for use by the individual sector and company signatories;
- endeavour that...training material prepared during the course of this accord be accredited through the relevant SETA and that the sector skills plans of the various sectors include the development of the skills necessary to sustain the commitments made in this accord; and
- where appropriate, exploit opportunities presented by energy efficiency projects to develop CDM projects.
- Considering and giving input to sound institutional structures for energy efficiency.

End-users Targeted

From the beginning, the Accord was understood to be primarily a private sector initiative, with participation from both the industrial (including mining) and commercial sub-sectors. Companies as diverse as Woolworths, a food and clothing retailer, Anglo-American Corporation of SA Limited, a South African-based multi-national with extensive holdings in both industry and mining, and Siemens Limited, a German manufacturer of energy technologies with a major presence in South Africa, were part of the original group of signatories. In addition, several key industry associations, including the Chamber of Mines, the Aluminium Federation of South Africa and the Chemical and Allied Industries Association, signed the Accord. Membership has remained open, and 6 new signatories were added in 2006, from a range of industry and commercial players, bringing the total signatories to 37.

SIGNATORIES TO THE ENERGY EFFICIENCY ACCORD - AS OF SEPTEMBER 2006	
ABB Holdings (Pty) Ltd	Holcim (South Africa) (Pty) Ltd
Aluminum Federation of Southern Africa (AFSA)	Impala Platinum Limited
Advanced Micro Devices	Kumba Resources Limited
Anglo American Corporation of SA Limited	Mittal Steel
Anglo American Platinum Corporation Limited	Mondi Business Paper
AngloGold Ashanti	National Association of Automobile Manufacturers of South Africa (NAAMSA)
Association of Cementitious Material Producers (ACMP)	Nedcor Limited
Barloworld Limited	PetroSA (Pty) Ltd
BHP Billiton	Richard's Bay Coal Terminal
BP Southern Africa (Pty) Ltd	The South African Breweries Limited
British American Tobacco South Africa	Sanlam Limited
Business Unity South Africa (BUSA)	Sasol Limited
Caltex Oil (SA) (Pty) Ltd	Shell South Africa Energy (Pty.) Ltd
Chamber of Mines	Siemens Limited
Chemical and Allied Industries' Association (CAIA)	South African Petroleum Industry Association (SAPIA)
De Beers	Total South Africa (Pty) LTD
Engen Petroleum Limited	Unilever
Eskom Holdings Limited	Woolworths
Goldfields Limited	

Subsequent Developments

Following the initial signing of the Accord in May 2005, the signatories met again in June to decide on the way forward; and BUSA and NBI then worked together to formulate a methodology and overall approach to meeting the Accord commitments. An Energy Efficiency Accord Technical Committee (EEATC) was formed under the auspices of the NBI, which met for the first time in October 2005 and has continued to meet monthly to provide continuing technical support to the Accord process.

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The EEATC also initiated a programme to develop a measurement and verification protocol which signatories could use to measure their progress, and this led eventually to publication of an M & V Guideline, as well as a series of workshops in 2005 to assist the signatories in establishing accurate and meaningful baselines.

A further workshop was held in Gauteng in September of 2006 to distribute the M & V Manual and begin the process of implementing the energy audit protocol, which had initially been prepared as a joint effort of the CBLA Project and the Chemical and Allied Industries Association and will now be adapted for generic use by all sectors.

Copies of the M & V Manual as well as of the CAIA Energy Audit Protocol can be obtained from NBI, contact details below.

Case Studies

To promote the Accord and demonstrate its effectiveness, NBI commissioned 4 of the Accord signatories to produce case studies of their energy efficiency achievements. All of the companies providing case studies utilized the M & V protocol developed by the EEATC in assessing their efficiency gains. Three of the case studies are summarised below:

- *Mondi Business Paper* is a multinational organisation with production facilities in South Africa, Slovakia, Israel, Austria, Hungary and Russia, and is a subsidiary of Mondi South Africa (www.mondi.co.za). The group is principally involved in the manufacture of business paper, packaging paper and converted packaging. Mondi Business Paper, has instituted a series of energy-saving measures at its Richards Bay Mill in Kwazulu-Natal. A variety of process improvements were implemented, including a new hardwood digester with lower operating temperatures and increased concentration of black liquor for use in recovery boilers. The Accord M & V protocol was used to evaluate efficiency improvements from these changes, and showed an overall saving in the July-December 2005 period of 44.3% in purchased energy, 13.9% in total energy and 18.1% in water consumption. These improvements also resulted in emissions reductions of up to 50% in SO₂ and CO₂. The total cost savings are estimated to be R38 678 654 per annum, or 27.2% of overall energy costs.
- *Holcim South Africa*, a local company of the global cement producer Holcim Group (www.holcim.com), installed a state-of-the-art heat recovery system in its Dudfield clinker plant in Northwest Province, recuperating over 75% of the heat from the hot clinker entering the clinker cooler to reduce fuel requirements, as well as replacing the main kiln burner with a new high-efficiency version and upgrading the cyclones in the pre-heater tower, which also decreased the energy required to fire the kiln. These improvements resulted in a 15% decrease in thermal energy consumption as well as reduced CO₂ emissions.
- *SASOL Synfuels* is a subsidiary of SASOL Limited (www.sasol.com), a South African company which is a world leader in coal-to-liquids and gas-to-liquids technology. SASOL Synfuels operates the world's only coal-based synfuels facility in Secunda, Mpumalanga Province, undertook a major upgrade of their steam-driven feed-gas compressors for their smaller Synthol reactors (allowing increased flow rate with no increase in input energy required). It used Eskom DSM funding to bring the project over the corporate hurdle rate. A total of eight compressors were targeted for upgrade, of which four have now been completed. Expected savings once the full project is completed: a total demand reduction of 25 MW, which translates to an installed capital cost saving of R2300/kW.

The four case studies are available as a single publication entitled "Energy Efficiency Case Studies" from the National Business Initiative, whose contact details are provided at the end of this document.

Financial resources and partners

This project has been essentially self-financing, that is, no external assistance has been provided other than the initial scoping studies and workshops which were partly funded by the Canadian

International Development Agency through the CBLA project. Since then, companies have sourced financing internally for energy efficiency upgrades and/or through funding sources like the DSM, which offers funding only for projects that reduce their electricity consumption. The coordination of the implementation of the Accord has been financed by in-kind contributions from partner companies and organisations and this has sustained the EEATC, while NBI has covered most of the cost of workshops and publications.

Finding / Outcomes

This project clearly demonstrates the value of voluntary initiatives as a key contributor to national energy efficiency programmes. On balance, voluntary programmes worldwide have shown that it is possible to stimulate energy efficiency improvements that are

“...achieved in a cost-effective manner consistent with good business practice, and (can also limit) the need to implement new government regulations.” (Energy Efficiency Case Studies, NBI, 2006).

Ideally, the Accord will achieve precisely this for South Africa: reductions in energy use that are consistent with the national targets, but at least cost to the nation.

Lessons learned and repeatability

The continued success of the Accord in recruiting new signatories, and its effectiveness in developing appropriate tools and methods for accurately measuring efficiency improvements, are testimony to the ongoing value and effectiveness of voluntary programmes. The Accord has also succeeded in bringing together companies which might previously have been seen as competitors, to share information on efficiency opportunities and to share the task of monitoring their progress. These monitoring activities themselves will also provide an invaluable basis for the Department of Minerals and Energy to measure national progress under the NEES.

While the Accord offers companies an opportunity to implement a voluntary initiative through acting collectively, concerns such as “free-riders”, accounting for non-signatories and other issues may arise particularly following the first evaluation period. These discussions are emerging in the EEATC and will be addressed as part of this forum’s deliverables.

The Accord has no known parallels in Africa, although there have been efforts in Kenya to develop country-wide programmes of energy efficiency training and implementation through the Kenyan Association of Manufacturers, run largely on a voluntary basis. Examples may be found from other countries in the continent, and it would be useful to assemble a more detailed comparative assessment of the value of such initiatives in implementing efficiency improvements in the absence of regulatory instruments.

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Printed reports or other literature available:

Title: **Energy Efficiency Case Studies**, NBI, 2006 (free)
Energy Efficiency Protocol, CAIA but available from NBI (free)
Measurement and Verification, Prof L J Grobler, available from NBI (free)