

The Private Sector Energy-Efficiency Programme

Two years of focused energy-efficiency
interventions in the private sector

2013 – 2015

Supported by



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Foreword



VALERIE GEEN

NBI's Head of Energy

The National Business Initiative (NBI) has worked on projects to support the shift toward a sustainable and low-carbon economy for a decade. On the back of its long-standing energy programme, the NBI launched the Private Sector Energy Efficiency (PSEE) Programme in December 2013.

Energy is one of the top three input costs to doing business in South Africa. So much so, that the South African government has identified energy security as the leading challenge to effectively jump-start the economy. Thus, efficient and cost-effective energy use has become a crucial business and national imperative.

The National Business Initiative (NBI) has worked on projects to support the shift toward a sustainable and low-carbon economy for a decade. On the back of its long-standing energy programme, the NBI launched the Private Sector Energy Efficiency (PSEE) Programme in December 2013.

This programme, which concludes in November 2015, was funded through a UK Department of International Development grant with technical support from the Carbon Trust and support from South Africa's Department of Energy.

Within a relatively short period of time, the programme has supported 37 large firms across a variety of sectors in developing comprehensive strategic energy-management plans. It has also conducted energy surveys at more than 950 medium company sites.

During these two years, the potential of the PSEE Programme to positively influence (and in many cases help develop) the energy-management strategies of South African businesses, has been demonstrated time and time again as companies voiced their concerns about business continuity in the face of uncertainty and fluctuating challenges of electricity supply.

The PSEE Programme is one of the interventions that has helped to address the question of business continuity if we all accept that reducing our energy consumption through energy conservation and energy efficiency is an important way to reduce demand on the grid.



The PSEE team

Based on our experience of working with companies over a number of years, we know that for some time big business in particular has been called upon to implement load shifting and energy-efficiency programmes.

Our recent experience through the PSEE Programme, where we have also interacted with hundreds of medium-sized and smaller companies across the country, has illustrated that a significant number of opportunities exist to reduce energy demand.

Not surprisingly, a number of these focused on behavioural changes such as improved management of people and resources around the use of energy. These include switching off any equipment that is not being used, improvement or up-scaling of maintenance programmes that can help identify and reduce inefficiencies in equipment, and process changes.

Opportunities such as technology changes with short pay-pack periods as well as supply-side solutions have been numerous.






The PSEE Programme is one of the interventions that has helped to address the question of business continuity if we all accept that reducing our energy consumption through energy conservation and energy efficiency is an important way to reduce demand on the grid.

Foreword

Even companies who consider themselves seasoned in energy-efficiency practice have discovered further opportunities to improve against the targets they have set themselves.

Within a relatively short period of time, the programme has supported 37 large firms across a variety of sectors in developing comprehensive strategic energy-management plans. It has also conducted more than 950 energy site surveys at medium-sized companies – the starting point for any company wishing to identify its energy-use profile and prioritise actions to reduce energy consumption. In addition, almost 4 000 small businesses have been assisted through telephonic services, web-based tools and free training workshops. See figure below:

Overall output indicators

	Programme target	Actuals achieved	Comments
Output indicators			
Number of companies registered on the PSEE website, and number of companies receiving advice over the phone	2 000	2 732	 target exceeded
Number of participants at workshops, reported by gender and race	933	1 999	 target exceeded
Number on-site surveys implemented at sites of medium-sized firms	765	988	 target exceeded
Number of follow-up services that have been provided	275	178	 target partially met
Number of large companies (annual energy spend in excess of R45 million) engaged in strategic energy-management interventions	35	37	 target exceeded

While the PSEE Programme's success is demonstrable and a valuable contribution alongside other programmes endeavouring to effect sustainable energy use, I have to agree with NBI CEO Joanne Yawitch: "We acknowledge the challenges of growing our businesses to have a positive impact on inequality, poverty and job creation, while simultaneously reducing our emissions.

However, we need to accelerate our business efforts, set more ambitious targets and work with government to ensure an appropriate enabling environment to drive innovation and reduce our emissions."

**Thank you so
much for the report and
please pass on my thanks to the
sponsor. I now have a plan of action to
implement more energy savings
that I would never have done
without this audit.**

*Simon Grier,
Owner: Villiera Wines*

**The Programme highlighted
the major and minor interventions
that we could make on-site to reduce
our energy bill.**

*Mark Liptrot,
Group Sustainability Manager,
Afripack*

**I would like to extend a big
THANK YOU from Italtile to the
PSEE for giving us the opportunity to
dig deeper and find new avenues to save
energy. We also appreciated the
follow-up report.**

*Naseema Elias,
Italtile*

The need revisited

“While there were many countrywide initiatives on energy efficiency, this call-to-action recognised that it was time for a consolidated response to address both energy security and energy price increases.”

– Joanne Yawitch,
NBI CEO

The necessity for South African companies to manage their energy demand and meet both country and value-chain obligations to reduce carbon emissions in the context of the Department of Energy’s energy-efficiency reporting regulations, energy security challenges and the impact of energy-price increases on companies’ operational costs, has been well communicated.

So too have the benefits of implementing energy-efficiency measures, such as improving business productivity, enhancing competitiveness and innovation and providing access to energy-efficiency financial subsidies and tax incentives.

For the past two years, the PSEE Programme contributed to improvements in energy efficiency in commercial and industrial companies in South Africa through the provision of various services to assist companies in identifying and implementing energy-saving measures.

It supported companies towards achieving:

- ❖ Energy savings;
- ❖ Energy-intensity reductions;
- ❖ Improved economic competitiveness through resource and process efficiency;
- ❖ Implementation of projects that will result in the reduction of Greenhouse Gas emissions;
- ❖ Leveraging investments from the private and public sectors through capital investment in energy-efficiency projects;
- ❖ Social benefits such as job creation and skills development relating to energy efficiency; and
- ❖ Increased awareness of energy efficiency.

Overall output indicators: over 21 000 GWh of lifetime energy savings identified by the PSEE.

	Identified	Implemented	Target
Nr. sites	1 103	336 (454 interviews conducted)	765 medium 35 large
Nr. opportunities identified	6 921	796	N/A
Annual energy savings (GWh)	2 087 GWh	129,3 GWh	N/A
Lifetime energy savings (GWh)	21 896 GWh	646 GWh	2 576 GWh
Lifetime carbon savings (MtCO ₂ e)	16,9 MtCO ₂ e	449,078 MtCO ₂ e	2 MtCO ₂ e
Capex leveraged	R3,5 billion	R69 million	R750 million
Average payback of opportunities	2,3 years	0,9 years	N/A
Average capacity usage (MW)	669,1 MW	41,4 MW	60 MW (estimated)

The bottom line:

- ❖ NERSA-approved hikes in energy costs between April 2013 and March 2018: 47% increase in electricity costs.
- ❖ 1 April 2015 increase of 4.69% on top of 8% annual hike.
- ❖ Fluctuating fuel prices impact energy spend.
- ❖ Electricity supply in South Africa under great pressure for at least the next five years.
- ❖ Energy-supply constraints a real threat to business sustainability.

Tailor-made services

As different-sized businesses require different types of support to optimise energy efficiency, the PSEE Programme offered three levels of service provision:

Small businesses	Medium businesses	Large businesses
(Energy spend < R750k p.a.) Free advice and guidance provided via: <ul style="list-style-type: none">❖ Training events and workshops;❖ Telephone;❖ Website; and❖ Publications.	(Energy spend between R750k & R45m p.a.) As for small businesses, plus: <ul style="list-style-type: none">❖ Fully subsidised 4-day energy site survey (valued at ±R30k) delivered by third-party energy consultants; and❖ Follow-up implementation support.	(Energy spend > R45m p.a.) As for small companies, plus: <ul style="list-style-type: none">❖ Co-funded Strategic Energy Consulting consisting of up to 60 days of support by 3rd party consultants (60% subsidised up to the value of up to R500k)❖ Ongoing relationship with PSEE Account Manager

When one considers the that 71.46% (5 out of 7) small businesses in South Africa fail in their first year (The Sowetan, 16 May 2013, quoting dti minister Dr Rob Davies).

Learnings of the PSEE Programme also show that many medium-sized businesses do not have the management capacity to even think about energy efficiency. Consequently, raising awareness about energy efficiency and its potential to generate savings was the first step towards securing the interest of management. Not surprisingly, whenever load shedding topped the national news agenda, the PSEE Programme's awareness-raising efforts proved especially effective.

Amid these and other challenges, few SME owners realise that energy is the single biggest growing cost in their businesses and it can present risks and opportunities for the sustainability of their businesses.

The "greening" of the global economy, along with the associated need for energy efficiency, is one of the most significant changes altering today's business landscape. It is also a trend that most SMEs are failing to adapt to in

- ❖ Office lights left on overnight use enough energy in a year to heat a home.
- ❖ In the retail sector, a 20% cut in energy costs through energy efficiency measures represents the same bottom-line benefit as a 5% increase in sales.
- ❖ AngloGold Ashanti recoups efficiency investment of R6.7 million from a single project.

significant ways. The PSEE Programme found that a further deterrent was a mistaken belief that energy efficiency is an expensive exercise requiring big investment.

The PSEE Programme has assisted around 4 500 small businesses in reducing their energy costs through targeted training workshops, toll-free support and web-based tools. The workshops provided small businesses with an opportunity to make the connection between how their own and their employees' behaviour impact the energy efficiency and associated costs of their businesses. The results include the identification of opportunities for no-cost or low-cost measures that could typically lead to a 20% saving in energy costs.

No-cost behaviour change measures could include such simple measures as ensuring that a company is on the right electricity tariff structure and switching off lights and office machines when not in use.

Low-cost energy-efficient measures include replacing traditional light bulbs with energy-efficient alternatives, as well as seeing to maintenance issues that could be responsible for wasteful energy use.



"Therefore, any opportunity to save energy is an opportunity to save money to plough back into your business and enhance the sustainability of the business."

Valerie Geen, head of energy at the NBI

Some energy-efficiency opportunities identified for small businesses include:

- ❖ Checking the accuracy of electricity bills to guard against municipal billing errors that could lead to a company being overcharged by hundreds, if not thousands, of rands.
- ❖ Comparing a spreadsheet of the business's energy spend over a period of time and taking note of any spikes in use; investigating the reason(s) for this and implementing remedial action.
- ❖ Conducting regular maintenance on equipment to improve efficiency and performance.
- ❖ Switching off lights, air-conditioning units, computers and other office machines when not in use.
- ❖ Taking a long-term view when purchasing new machinery; instead of considering price only, the energy use of various models should also be factored in.

Recommendations from fully funded energy audits at medium-sized businesses include:

- ❖ Developing and implementing an energy-management policy and strategy;
- ❖ Implementing staff energy-awareness training;
- ❖ Use of energy-efficient lighting and controls;
- ❖ Improved metering on fuel/electrical consumption;
- ❖ Reviewing compressed-air system operating strategies;
- ❖ Identifying and repairing air leaks in all areas;
- ❖ Replacing existing geysers with heat pumps;
- ❖ Reviewing and optimising fridge system operation; and
- ❖ Insulation improvement and maintenance of filters.

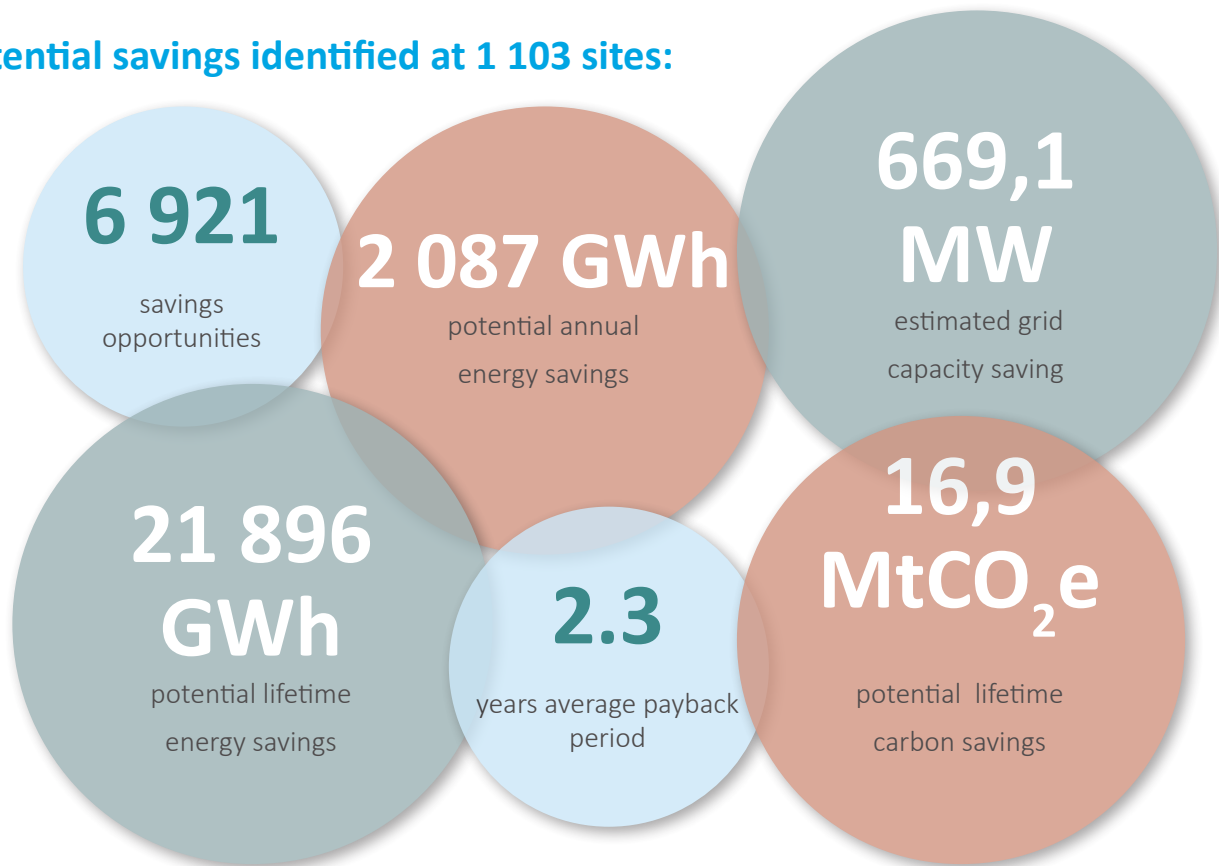
An energy audit at one medium-sized company identified savings of at least R86 000 per annum without any capital investment; and at another medium-sized company, an energy audit found that a once-off capital investment of R1.3-million would translate into ongoing annual savings of at least R720 000.

In addition, businesses that have received survey-based or similar support but required assistance in taking identified opportunities to the point of implementation, received tailored follow-on support to:

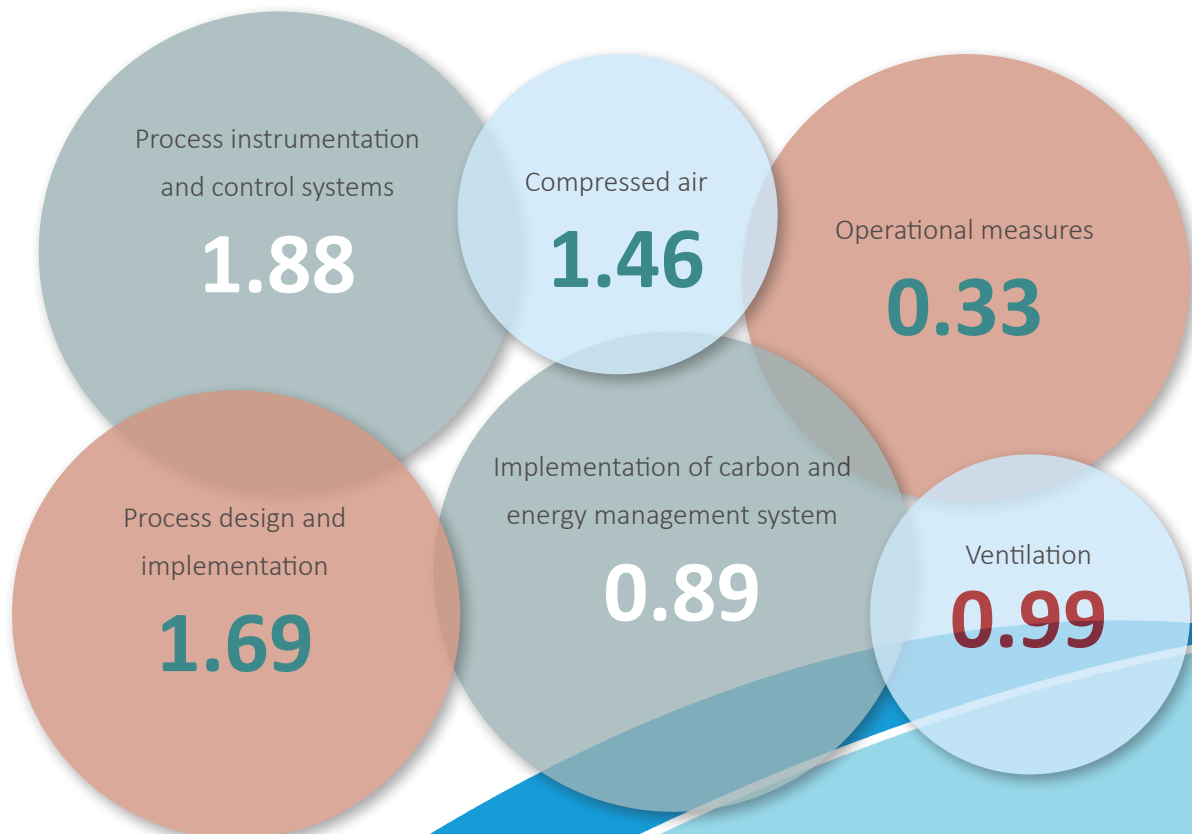
- ❖ Prioritise projects for implementation;
- ❖ Build a business case for implementation; and
- ❖ Understand the finance and technology options available.

The PSEE programme in numbers

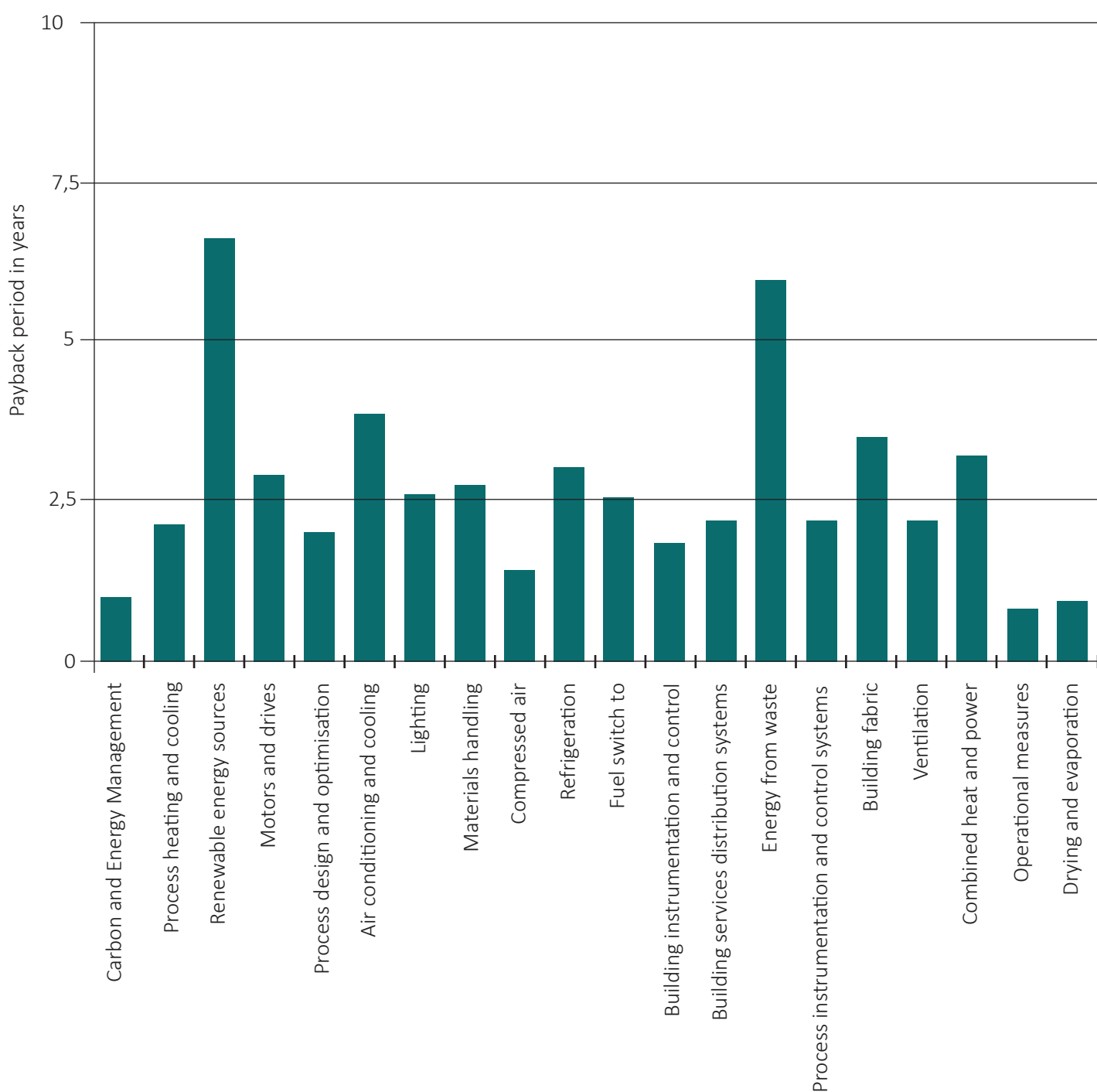
Potential savings identified at 1 103 sites:



Examples of interventions identified through surveys with average payback period in years:



PSEE recommendations by technology, with average payback period in years (September 2015)



Energy efficiency widely endorsed



PSEE staff with pres. Zuma and members of Cabinet

The pursuit to entrench a culture of energy efficiency – and reaping the subsequent financial and environmental benefits – has received support from the highest office in the country in the form of participation as well as strategic interventions, and from a wide range of organisations in various sectors.

Government

The NBI, in its capacity as secretariat to the Energy Efficiency Leadership Network and manager of the PSEE Programme, was invited by the Presidency to partner in the launch of the Presidential and Government Energy Savings Campaign and showcase work being done in the private sector. The launch was a call to all 700 staff members within the Presidency to conserve energy and adopt energy-efficiency measures as part of a national plan to respond to the current energy challenge. Government committed itself to lead by example by setting targets to save R2-billion on energy consumption and R500-million on water consumption over the five-year period of the current administration.

SA companies have shown an impressive dedication to transparency and disclosure. In the context of needed trust building between stakeholders this is an important contribution

Joanne Yawitch, NBI CEO.

Tax break

Such is government's commitment to energy efficiency that it introduced the Section 12L tax incentive at the launch of the PSEE Programme in 2013. The 12L incentive allows companies to claim for tax deductions after implementing energy-efficiency measures (also through co-generation projects). These savings must be verified by SANAS-accredited professionals and the kilowatt-hours (or kilowatt-hour equivalent) savings are reimbursable for one calendar year of energy-performance assessments. The value of the incentive is R0.95 per kilowatt-hour (or kilowatt-hour equivalent) of energy-efficiency savings. South Africa is the first country in the world to implement a per-kWh- saved-based tax incentive.

Energy reporting

12 June 2015 was the closing date for submissions on a government gazette on the development of an Energy Efficiency Monitoring System, which proposes the requirement of manufacturers to submit detailed data on their energy consumption and energy-efficiency plans. Certain manufacturers will be required to report to the Department of Energy within 30 days of the end of each financial year on the implementation of the energy-management plan. A report from the South African Carbon Disclosure Project, managed by the NBI, states that South African companies are doing well in reporting their emissions management and strategies. In fact, the report, which highlights improvements in climate change performance and disclosure, places South Africa as one of the top two responding geographic samples in the world.

Influencing suppliers

A number of companies have joined the NBI by encouraging their supply chains and members to make use of the opportunities offered by the PSEE Programme. These include Woolworths, Mercantile Bank, ABSA, First Rand Bank, Vinpro, eThekweni Municipality, the Southern African Vinyls Association, the Ekurhuleni Captains of Industry Forum and Ekurhuleni Business Initiative, MassMart, Sanlam and the Manufacturing Circle.

Leading South African companies

A number of companies have achieved significant results by implementing energy efficiency measures:

- ❖ Engen has saved more than R2.3-million across its dealer network through a lighting project.
- ❖ Telkom has saved approximately 16-million kWh since 2012 as a result of energy-efficiency initiatives they've implemented.

- ❖ The installation of new technology has cut **Glencore**'s energy bills by more than 20%.
- ❖ **Transnet** is saving about R50 million annually on electricity costs by regenerating energy in new locomotives.
- ❖ **AngloGold Ashanti** recouped an efficiency investment of R6,7 million from a single project.
- ❖ **Growthpoint**'s designs and retrofit energy initiatives are saving tenants more than R62 million a year.
- ❖ Energy-efficiency projects at **Woolworths** are set to save the company R190 million in four years.
- ❖ A ventilation overhaul is saving **Anglo American** R2 million annually and inspiring further savings.
- ❖ In a first-of-its-kind partnership in higher education, the **University of South Africa** entered into a collaboration agreement on energy efficiency with the NBI. The objective of Unisa's participation in the PSEE Programme was not only for the university to benefit from energy-efficiency savings, but also to pass on the learning to Unisa's approximately 300 000 students.
- ❖ **Coleus Packaging** could save more than R1,5 million annually, with first steps already saving the Johannesburg manufacturing facility R900 000 in electricity costs.
- ❖ Building on energy-efficiency measures already in place, **Western Gruppe** could cut energy costs at its supermarkets by as much as R1,9 million annually. For a capital cost of around R2,1 million, twelve SPARs and a distribution centre in the Eastern Cape could reduce their energy consumption by around 1,57 million kWh a year.

Climate change top performers and leaders were recognised at NBI's 2015 SA CDP report launch:

SA companies on the 2015 global climate A list for performance excellence:

- ❖ Harmony Gold Mining Co Ltd
- ❖ Investec Limited
- ❖ Kumba Iron Ore
- ❖ Nedbank
- ❖ SABMiller

SA companies on the Climate Performance Leadership Index for 3+ years:

- ❖ FirstRand Ltd
- ❖ Gold Fields Ltd
- ❖ Barloworld
- ❖ Harmony Gold Mining Co Ltd

SA companies in the Climate Disclosure Leadership Index for 6+ years:

- ❖ Anglo American Platinum
- ❖ Gold Fields Ltd
- ❖ Exxaro Resources Ltd
- ❖ Nedbank Ltd
- ❖ FirstRand Ltd
- ❖ Mediclinic International
- ❖ Remgro

In addition, Group Five Ltd and Hulamin were recognised for consistently electing to respond to the CDP since its inception in SA, despite not being in the formal sample.

Selected programme beneficiaries

The PSEE Programme has worked across various industries to achieve its objectives. Some companies have used the PSEE Programme to further strengthen their existing programmes, many companies have already started to show positive results, while some are only starting on their journey.

Building

Nearly 60% of the world's electricity is consumed by residential and commercial buildings. The building sector is also the single largest contributor to greenhouse gas emissions (UNEP). The PSEE Programme has partnered with property firms to help identify areas where energy can be saved. One such partner, Growthpoint, has identified designs and retrofitted energy initiatives that have resulted in savings of R62-million per year for their tenants.

Manufacturing

The programme has also helped several manufacturers identify opportunities to reduce their energy spend and help boost profitability, and to work together as a sector to reduce demand on the grid.

Mining and heavy industrials

The mining and heavy industrials sector is energy-intensive and could benefit greatly from energy-efficiency interventions. Main areas of intervention include identifying and fixing compressed-air leaks, upgrading motors and retaining heat in the furnaces. Mining majors such as Exxaro, Sibanya Gold and Sasol Mining were PSEE Programme participants.

Retail

The PSEE Programme has worked with retail groups and stores to help identify energy-efficiency opportunities with regard to staff behaviour, lighting, heating, ventilation and air-conditioning and maintenance, as well as heating and cooling systems.

Some results from the plastics sector

The hydraulic injection moulding machines at a plastic injection moulding plant accounted for roughly 50% of the company's annual energy consumption of around 3.5-million kWh. A PSEE-funded energy audit identified a number of activities that could save the company more than R700 000 per annum in a matter of months. These activities include:

- ❖ No-cost behaviour-change initiatives that could lead to savings of around R30 000 a year;
- ❖ The installation of barrel insulation on the injection-moulding machines at a cost of less than R50 000, producing an annual saving of more than R100 000; and

- ❖ The installation of a master controller to better regulate compressors during peak and off-peak periods, requiring an investment equal to the potential annual savings in a single year.

Results from the wine industry

A PSEE-funded survey at a family-run winery in the Stellenbosch region, with a local and international customer base, has identified the biggest saving opportunities in the water-cooling and associated pumping system. For example, it was recommended that instead of controlling the flow from the water circulation pumps by partially closing some of the butterfly valves, the valves should at all times be fully opened and the flow controlled via a variable-speed drive. The cost of the pump system optimisation would be recovered in one year through savings that could be achieved. Should the estate implement all the recommendations from the report, they could save more than half-a-million rand per annum over the next ten years.

Medical healthcare industry results

A company in the medical healthcare sector, with a total electricity use of around 3.5-million kWh per annum at a cost of just under R3.5-million, signed up for a PSEE-funded survey. The results revealed that the company could save almost R40-million over a ten-year period for an initial investment of less than R10-million. This could be achieved through a combination of managerial and organisational developments (e.g. implementing an energy-management policy and strategy); tariff-related actions (namely power factor corrections in the laboratory); revised energy conservation and operating procedures (e.g. computer switching-off procedures); energy-efficiency investments (such as replacing lighting fittings and installing ceiling insulation); and renewable electricity generation by means of solar power. Should all the recommendations be implemented, it would lead to a total carbon footprint saving of around two tonnes of CO₂ per annum – translating into an impressive reduction of 61%.

The following are examples of savings opportunities identified at a few of the companies that have signed up for PSEE audits. More case studies can be viewed on the PSEE and NBI websites (www.psee.org.za and www.nbi.org.za).

Conro Precision

Conro is a plastic injection moulding company in Cape Town that uses an average 285 000 kWh of electricity each month. The energy-saving assessment done through the PSEE Programme found that for a single investment of roughly R800 000 Conro could save R710 000 in energy costs a year, 1 037 tonnes CO₂ and one million kWh. Following the assessment, Conro has implemented systems and policies to monitor and manage energy and has

Sun International

Sun International launched an energy-management strategy and policy, aiming to demonstrate environmental responsibility and encourage energy efficiency at its 21 properties. Among the targets are a 5% cut in water consumption from the 2014 baseline and a secure water supply at all properties, while being a responsible water user. It aims to reduce electricity consumption by 8% per m² for all properties by 2016, also from the 2014 baseline. The group aims to recycle 35% of all waste by 2017. Waste separation and recycling initiatives are being implemented at most Sun International properties.

Woolworths

Despite the fact that Woolworths has been actively saving energy and reducing carbon emissions for quite some time, it requested the PSEE Programme to conduct energy audits at three of its distribution facilities. The survey revealed that, for just one of its projects, an initial investment of R556 000 would translate into a massive R14- million saving over the next 10 years. This means that the investment would be recouped within the first year, freeing up well over R13-million to plough back into the business. In addition, Woolworths engaged more than 100 of its suppliers to participate in energy audits, fully paid for by the PSEE Programme. These comprised both medium-sized and small suppliers across various industries including food, marketing, clothing and non- trade procurement. Not surprisingly, Woolworths's progress to date has established them as one of the leading South African companies in this initiative.

Zimmermann & Jansen South Africa

Zimmermann & Jansen South Africa specialises in the manufacture of heavy-duty valves used in the petrochemical, iron and steel markets. It also has a service division that specialises in supplying mission-critical valves and control systems in the oil, gas and power generation markets. A PSEE-funded site survey determined that Zimmermann & Jansen could reduce its annual electricity costs by at least R172 000, while dramatically reducing its carbon emissions. Over the next five years, this translates into approximately R1-million in savings on electricity when one takes into consideration future electricity cost increases.

Western Gruppe

Western Gruppe is a retail and wholesale company that sells food, personal and homecare products at its SPAR stores in the Eastern Cape. What began as a humble fruit-and-vegetable shop in Mthatha has grown into an organisation with more than 1 400 employees, 13 SPAR retail outlets, 2 pharmacies, 14 liquor outlets and a distribution centre in East London. The PSEE conducted energy audits at 12 of the retail outlets as well as the distribution centre.

Building on energy efficiency measures already in place, Western Gruppe could reduce energy consumption by around 1,57 million kWh a year and cut energy costs by as much as R1.9 million annually. Key recommendations from the PSEE audits included a focus on savings opportunities in the following areas:

- ❖ Refrigeration (typically the highest energy consumer in supermarkets, and accounting for at least 50% of electricity costs at Western Gruppe stores)
- ❖ Lighting
- ❖ Implementing an energy monitoring and targeting system
- ❖ Installation of micro-sprayers on compressors
- ❖ Developing and implementing an energy management policy
- ❖ Ensuring that all outlets are on the correct electricity tariff
- ❖ Implementing a fleet management system (more than half of the distribution centre's roughly R397 000 annual energy cost is diesel for its fleet).

According to Nigel Connellan, Director of Western Gruppe, the Group has implemented most of the recommendations and will continue doing so as and when they are able to, adding that this will add to the bottom line while also assisting in curbing global warming and threats to the environment, "which is what every business should be doing."

Raising awareness/sharing information

Face-to-face engagement

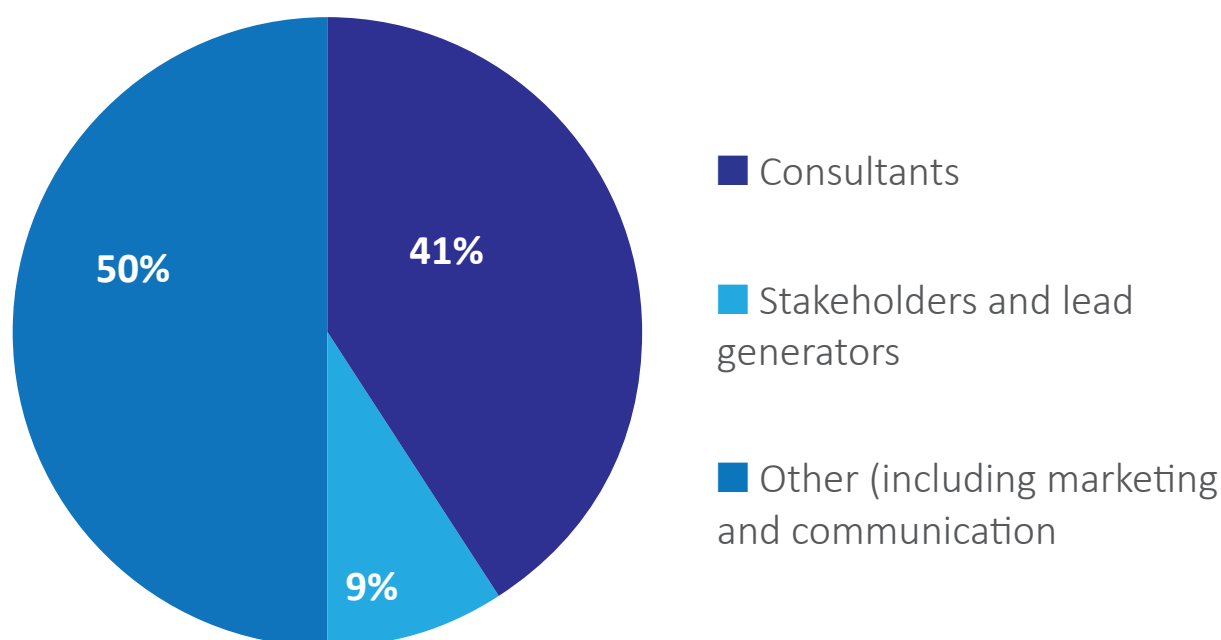
A number of four-hour workshops were presented in the major metropolitan areas. About 20 delegates usually attended these workshops, allowing for one-on-one interaction between delegates and energy specialists. Delegates who brought along their business's electricity bill also had the opportunity to work through it with a specialist.

Workshop topics ranged from a basic introduction to energy efficiency and what it means in terms of small businesses, to sessions focused on topics such as plant technology, heating, ventilating and air-conditioning, lighting and refrigeration.

Marketing, communications and lead generation

A print, radio and online media campaign generated a significant amount of enquiries and reminded companies that the power was in their hands to take control of their energy use – even in the face of bleak economic forecasts, energy price hikes and threats to energy security. With the support of funding from the PSEE Programme, businesses were invited to invite an external third party to identify opportunities they might have overlooked that could help conserve energy and save money, which could in turn be reinvested either into further energy-saving projects or other parts of the business.

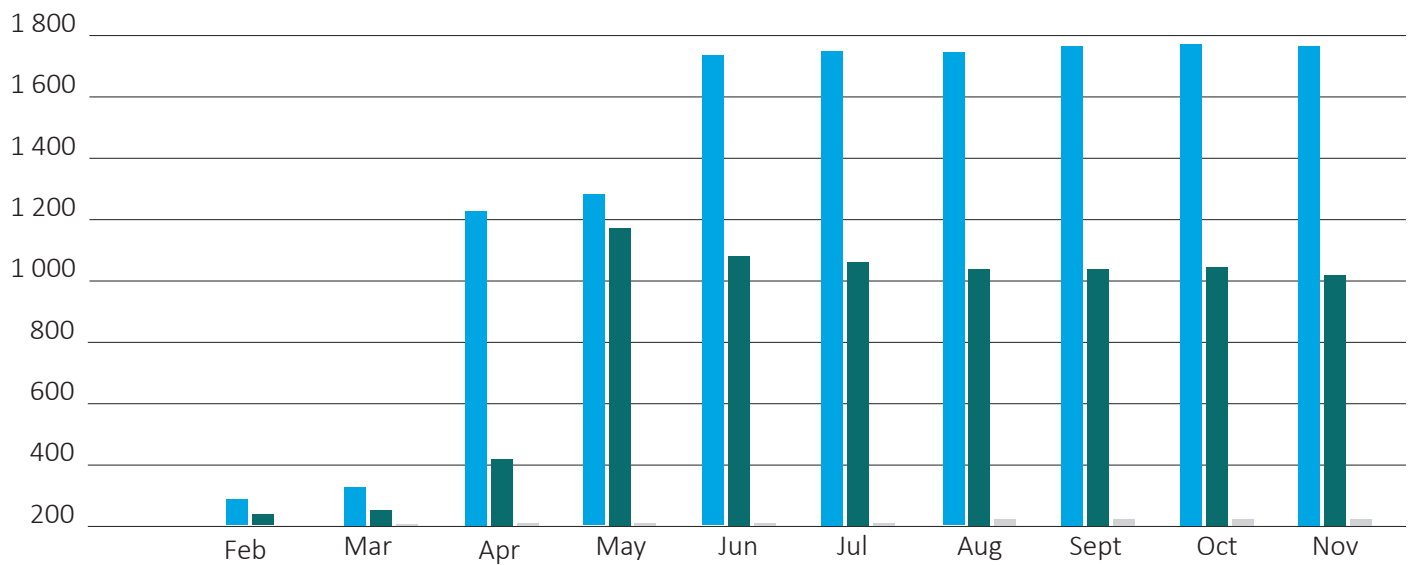
In response to a management review which indicated the need for a different blend of approaches to fill the pipeline of companies interested in the PSEE's services, a Lead Generation Strategy was introduced in January 2015. This was based on the realisation that lead generation- particularly among large and medium size firms- is more successful when it builds on established relationships with Business/Industry Associations and leading companies with significant supply chains. The PSEE's consultants also played a key role in lead generation, signing up more than 300 medium companies for the PSEE's offerings.



The role of Marketing and Communications remained important in supporting lead generation through a continued focus on brand building and raising awareness of energy efficiency as a business imperative. The results in terms of exposure and reach through various media channels, social media platforms and the PSEE website from February to November 2015 are depicted below :

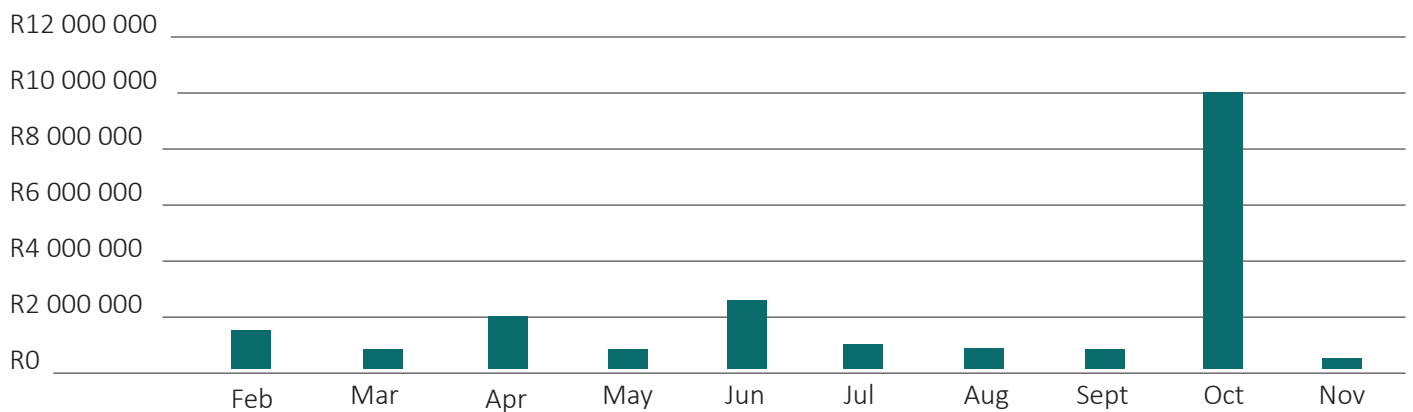
	January to November 2015
Total visits	11 095
Returning users	4 443
Unique users	6 652
Pages per session	3.31
Average time per session	4:14

Social media performance



	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov
Facebook	88	133	1 035	1 087	1 542	1 552	1 560	1 561	1 566	1 573
Twitter	36	55	226	982	855	864	848	837	840	838
LinkedIn	5	9	13	12	15	20	20	24	24	24

Media coverage achieved, Feb – Nov 2015



Advertising equivalent value (AVE): R7 229 589,60

Public relations value (3 X AVE): R21 762 550,18

Total audience reach: 32 123 247

We were satisfied with the outcome and have found the project of immense benefit to Sibanye and also to the industry. The outcomes will continue adding value as we go forward with our mitigation and adaptation endeavours. We will definitely consider participation in such collaborative projects should the opportunity arise again.

***Danny Ramsuchit, Air Quality
& Carbon Management,
Sibanye Gold***

Publications

The PSEE Programme has contributed greatly to the energy-efficiency knowledge base by developing a number of relevant publications, which can be downloaded free from the programme's website, to assist companies in their energy journey.

Sector-specific:



The high temperature industry is very energy intensive. Increases in energy prices have had a major impact on companies in this sector, so reducing energy consumption makes good business sense.



The energy used in catering facilities typically accounts for 4-6% of operating costs. Many caterers work on a profit margin that is within this range, so it is obvious that saving energy can directly increase revenue and profitability without the need to increase sales. Being energy efficient can also enhance the reputation of all catering facilities and help to attract customers seeking food which has been produced more sustainably.



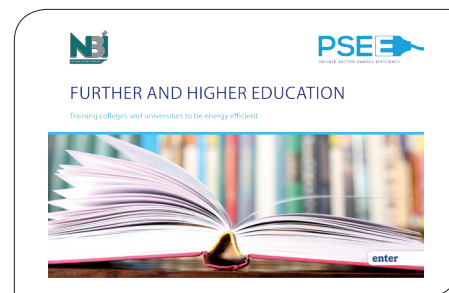
Although relatively small by international standards, South Africa's chemical industry is the largest in Africa, contributing about .5% of GDP and employing approximately 200 000 people and representing around .25% of all manufacturing sites. This publication features energy-saving opportunities in the chemicals sector.



This overview for the manufacturing industry introduces the main energy-saving opportunities for businesses in this diverse sector and demonstrates how simple actions can save energy and reduce energy bills.



A 20% cut in energy costs represents the same bottom line benefit as a 5% increase in sales. This publication shows how retail companies can cut down on energy costs.



Further and higher education (FHE) is a growing sector, with student numbers in South Africa increasing by 82% over the past 20 years and set to increase to 60% of the population completing further education and 23% completing higher education over the next 20 years. This means that the energy consumption of colleges and universities is also growing. This publication provides practical guidelines which will enable most FHE institutes to reduce energy use by 20% through a mixture of behaviour change, no-cost efficiency improvements and investment in infrastructure.



Energy consumption in the food and drink sector could be considerably reduced by implementing simple and effective energy saving measures, reducing carbon emissions and cutting the costs for businesses. This publication is aimed at managers in the food and drink processing industry working in all sub-sectors. Focusing on the low and no-cost measures and actions which will have the quickest payback, this overview demonstrates the best energy saving opportunities in the sector.



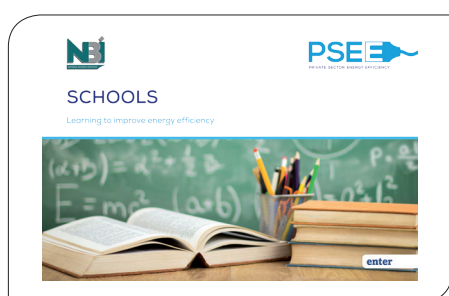
Within the hospitality sector, energy costs may only be a small percentage of turnover, but reducing them can directly increase revenue without the need to increase sales.



Organisations:



Poor control of heating, ventilation, cooling and lighting is responsible for excessive energy consumption in many buildings. Having better control over working areas helps to produce a consistently comfortable environment for building occupants. This overview is aimed at managers who are responsible for improving the quality of the internal environment, focusing on reducing energy consumption through the use of effective building controls.



This overview for the schools sector introduces the main energy-saving opportunities that can be found in the majority of schools and demonstrates how simple actions save energy, cut costs and enhance the learning environment.



This publication covers each of the main types of electrical appliance found in offices and explores opportunities for more energy efficient operation. Energy labelling schemes are also addressed. Because most businesses have some form of office equipment, the energy efficiency measures in this publication are relevant to many sectors.



This technology overview introduces the main energy-saving opportunities for motors and drives. By taking simple actions, companies can save energy, cut costs and may increase profit margins.



Energy is one of the largest controllable overheads in office buildings, which means there are many opportunities to make savings. Reducing energy consumption not only saves money, but improves working conditions, which can increase staff productivity. Furthermore, the environment will benefit from reductions in energy use and carbon emissions, which enhances corporate reputation. Using the simple and cost-effective measures detailed in this guide could reduce your energy bill by as much as 20%.

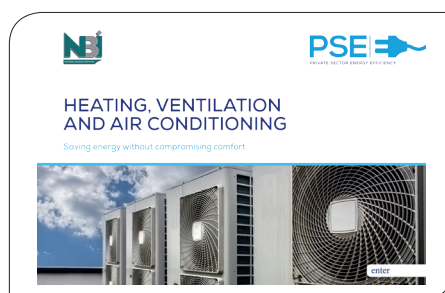


Compressed air is very versatile and almost all industrial businesses use it – in fact, over 10% of electricity supplied to industry is used to compress air.

Technology/system-related:



Reducing energy through the correct choice and use of refrigeration systems makes perfect business sense; it saves money, enhances corporate reputation and helps everyone in the fight against climate change.

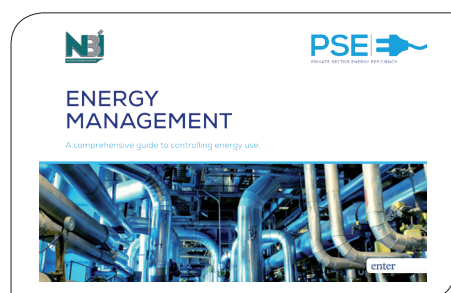


Heating, ventilation and air-conditioning (HVAC) systems control the temperature, humidity and quality of air in buildings to a set of chosen conditions. This publication gives a technology overview of HVAC systems, the energy consumption as well as some easy low- and no-cost options to help save money and improve the operation of HVAC systems.



This lighting publication provides an overview of the mechanics of light as well as its application to different settings and illustrates how lighting hardware can achieve this. The guide also introduces the main energy-saving opportunities for lighting and demonstrates how simple actions can save energy, cut costs and may increase profit margins.

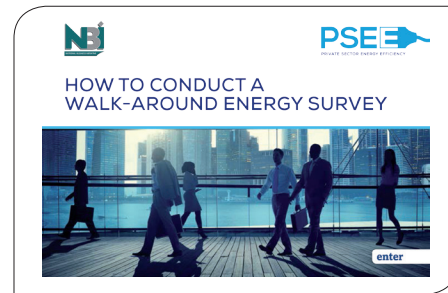
General support:



This practical guideline provides key information to enable companies to better understand and manage the energy consumption of their businesses. Furthermore, this guideline provides tangible actions to help create and sustain energy management within an organisation.



How adopting a green growth strategy can give your organisation a competitive edge.



A walk-around energy survey is a brief survey of all relevant buildings. This is the primary method of assessing energy use in an organisation.



ENERGY SURVEYS

A practical guide to identifying energy saving opportunities



Electricity supply in South Africa is expected to remain under great pressure for at least the next few years. Therefore, we all need to do our bit to ensure that we reduce pressure on the grid by saving energy and becoming more energy efficient in every sphere of our lives – as government, as business and as private individuals.



GUIDE TO ENERGY EFFICIENCY FINANCE IN SOUTH AFRICA



This guide provides information about financial support available for energy-efficiency projects from government, the private sector, energy services companies and other partnerships as well as foreign agencies present in South Africa.



MAKING THE BUSINESS CASE FOR AN ENERGY EFFICIENCY PROJECT

How to win over the board and influence people

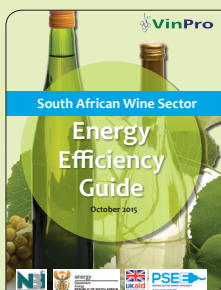


General support:

This practical guideline will help anyone who needs to motivate for funding to implement an energy-efficiency project. It does so by providing tangible advice on how to build a business case and present it to decision-makers in an effective way to improve the chances of implementation.

Energy-efficiency guide for the wine industry

South Africa's electricity challenges are a major concern for the wine industry. This guide was developed with the assistance of Vinpro and its member wineries that participated in the PSEE, and gives insight into improving the energy efficiency of wine cellars, thus boosting energy efficiency in the whole wine sector.



BETTER BUSINESS GUIDE TO ENERGY SAVING

Introducing measures to help organisations save carbon.



This practical guideline will help all companies (especially small businesses) identify energy savings opportunities that don't cost a lot of money. It does so by providing tangible advice on aspects such as heating, lighting, electricity bills and how to implement savings opportunities.



CREATING AN AWARENESS CAMPAIGN

How to increase uptake of energy efficiency



Most companies can save at least 10% of their electricity bills purely through low-cost measures, including behavioural changes among staff. This practical guideline will help all companies to raise awareness of energy use among staff.




Overview of PSEE conference

The PSEE programme under the leadership of the NBI and as part of its stakeholder engagement and marketing strategy, hosted a two day conference on the 12th and 13th of October 2015 at the Wanderers Club in Johannesburg. Stakeholder feedback sessions were also held in Cape Town, Durban and Port Elizabeth.

The key objectives of the conference were:

- 1. To give feedback to all stakeholders on the progress and outcomes of the Programme since its inception.** (This outcome was achieved through the conference content, DVD, Publications, Case Studies and Exhibitions from participants in the programme)
- 2. To showcase overall achievements, lessons learnt and highlights through Case Studies** (plenary case study presentations, panel discussions and exhibition)
- 3. To host solution-focused dialogues on barriers to improved energy management in particular focus areas** (i.e. Energy Management, Finance, Technology, Building Efficiency, Energy Efficiency in Transport and Logistics)
- 4. To forecast Energy Demands in a changing world** (Global Business Trend Analysis and its likely impact on Energy; SA Policy for Economic Growth and Development and its relevance for energy: This includes forecasting what the world might look like in 2020-2030 and the role of Energy in that changing world)

Note that copies of presentations and other resource materials are available on the NBI website at www.nbi.org.za



The strategic sessions listed in 1.3. above concluded the following :

Financing energy efficiency

Since the 12L tax incentive was launched alongside the PSEE on the 3rd December 2013, it was useful to reflect on progress on the take up of the 12L incentive

- ❖ SANEDI reported an Increased pipeline of companies applying for the incentive, especially large companies
- ❖ Efforts to remove measurement and verification (M&V) as a barrier were continuing to expand beyond the four main M&V companies to the introduction of an M&V “light” service, a more cost-effective model particularly for smaller companies/sites and simpler technology improvements.

Commercial financing:

Based on the experience of companies accessing development finance and commercial finance, lessons have been learnt on how to improve this offering in the future.

- ❖ The disconnect between Lender requirements and loan applicant requirements still needs to be addressed in future initiatives such as the support offered through financing from the French Development Agency through Nedbank, ABSA and the IDC.
- ❖ There needs to be clearer scoping of project finance
- ❖ There needs to be an ongoing communication/customer management relationship between financiers and customers
- ❖ Continuous capacity development of bankers is needed to understand their customers and develop and market appropriate products
- ❖ Much greater focus needs to be given to SMEs in the future from both a public and a private sector perspective
- ❖ The need for the working capital gap required for SMEs needs to be addressed – A pilot project is being undertaken between SCF capital and DBSA to look at appropriate solutions for SMEs.

Mainstreaming energy efficiency

- ❖ A common theme in energy management is the need for improved management with regard to Energy Efficiency. This requires a more dedicated focus by management within companies on the need for energy management planning that incorporates the resourcing of this function as well as a systemic approach to Energy Management that extends beyond the Energy Manager and includes the offices of Finance, Procurement, Operations, Communications and awareness raising within companies. Past experience has indicated that Energy Efficiency is often sacrificed in favour of production. Given the significant and continuous rise in energy prices, possible recurring energy security challenges and the need to mitigate carbon emissions, energy consumption and reduction needs to receive much greater strategic focus within companies. Such focus would then assist in addressing internal financing options and proactive measures to access alternative financing and incentives.

Energy efficiency technologies

- ❖ Over 6 900 opportunities identified for Energy Efficiency improvement (the payback period for most technologies was around 2.3 years)
- ❖ Technologies include Lighting, HVAC, air compressors, waste-to-heat recovery, pumps, motors, metering and controls, and Solar PV
- ❖ Agreement that the first solution should include management and behaviour change
- ❖ Government through the Departments of Science and Technology and Environmental Affairs are very involved in looking at a low carbon trajectory/ Technology Roadmap
- ❖ There is a need for engagement and education between Business, Government and Research institutions for alignment and prioritisation of technology deployment
- ❖ Technology is not an end in itself
- ❖ Renewable Energy is a new game changer needing more attention in the future.



Energy efficiency in buildings

- ❖ Buildings are a major consumer of energy in urban areas and part of the focus of sustainable cities
- ❖ There is a growing trend towards green buildings and refurbishment of existing buildings
- ❖ A building systems approach is required for optimal energy performance in buildings
- ❖ There needs to be consideration given to where this responsibility is located in the business, e.g. the roles of utility managers, facility managers, energy and sustainability managers. Such roles should be informed by the energy management strategy and plan of the company
- ❖ Financing in the property sector through incentives: The NBI commissioned Cova Advisory to do a piece of work offering recommendations to feed into SANEDI's and Treasury's processes to ensure that more appropriate access is accorded to property owners and tenants
- ❖ The importance of monitoring and control for optimum performance was emphasised.

Energy efficiency in transport and logistics

- ❖ The Department of Transport had finalised a Green Transport: Energy Consumption strategy and is expected to be more involved in relation to carbon mitigation and the forthcoming Energy Efficiency Strategy
- ❖ The Department of Energy was also looking at modelling the use of vehicles to inform future energy strategies
- ❖ From a urban perspective, there was strong emphasis on modal shifts
- ❖ While it will need closer provincial/municipal investment, the need for Public Private Partnerships and engagement will be critical, especially in pursuit of densification plans
- ❖ Fleet management: Behavioural change, monitoring and tracking were identified as key issues
- ❖ Infrastructure: There needs to be a discussion on who bears the cost, particularly in considering old infrastructure such as oil refineries
- ❖ Vehicle standards
- ❖ Shift from private vehicle use to public transport.

Acknowledgement of companies and consultants

A number of companies and consultants were acknowledged at the PSEE conference for their work in the energy space, based on results available by 18 September 2015.

Companies

Ten companies were acknowledged at the conference for their leadership and commitment to energy efficiency as illustrated by their proven commitment to the implementation energy saving opportunities:

Amalgamated Beverage Industries (ABI)

- ❖ CBC Feeds
- ❖ Eston Brick & Tile
- ❖ Lodestone Brands
- ❖ Mitak
- ❖ Much Asphalts
- ❖ Reunert
- ❖ SFR Flexipak
- ❖ Sunspray Food
- ❖ Woolworths Holdings

Consultants

Seven consultants (from a pool of 113 vetted and contracted by the PSEE) were recognised for consistently delivering a high-quality service to participating companies. The selection was based on the outcome of evaluations by PSEE Account Managers across a range of criteria after completion of each survey. The consultancies are:

- ❖ Energy Resource Optimisers
- ❖ Environmental Resources Management
- ❖ HAZMU Consulting
- ❖ Barclay Richards
- ❖ Grey Green Sustainable Energy Engineering
- ❖ Integrated Energy Solutions
- ❖ Koos Bouwer Consulting



Lessons learnt from the PSEE programme

Governance

As in all programmes, the need for good governance is important in ensuring the success of a programme of this magnitude. A stakeholder mapping exercise was established early in the programme and assisted in identifying key stakeholders to constitute the relevant structures. The Project Steering Committee which played an oversight and leadership role comprised of DFID, the Department of Energy, the Department of Trade and Industry, the Energy Efficiency Leadership Network, a representative from the Board of the NBI and NBI leadership. The Carbon Trust was also present for technical support.

We are pleased to say that in the main this structure met in accordance with most of the scheduled meetings and provided appropriate oversight. An area which should have achieved greater priority was the future sustainability of the programme. By not addressing this at the outset, efforts to ensure continuity of the good work of the programme have not been successful as yet.

Project management structure

This platform comprising the NBI, DFID and DoE met regularly to deal with all operational matters requiring collective decision-making and execution. In addition to fostering a good relationship and good administration and follow-up actions from collaborative effort, risks were mitigated and the programme was able to deliver successfully on its targets.

Stakeholder Engagement, Marketing and Communication

Stakeholder engagement

A very comprehensive exercise was carried out at the beginning of the programme to identify key stakeholders that had an interest in this programme and could assist in ensuring that the programme delivered successfully within the very tight timelines. By involving other business organisations, industry associations, structures such as the Energy Efficiency Leadership Network, the Industrial Energy Efficiency Project, companies and consultants, the NBI/PSEE team was able to leverage their support in generating leads for the programme. This was especially important given the compressed timeframe and the fact that NBI was not a known brand among medium and small enterprises.

A significant lesson learnt in this programme was the need to integrate the marketing strategy into the programme strategy at the outset and to make an adequate and appropriate allocation of resources to this function.

Under this function, the objectives included:

- ❖ Raising awareness about the PSEE
- ❖ Education and awareness raising about Energy Efficiency
- ❖ Showcasing the work and achievements of the programme

Awareness raising about the programme relied on a combination of advertising, Public Relations and other promotional campaigns. While the contracting of agencies to drive and support this function was useful in creating initial awareness, this had to be supplemented by a lead generation strategy which included relying on key partners to assist in awareness raising. Such agencies included industry associations, leading companies bringing in their supply chains, and consultants recruiting from their own client relationships.

The ability of the programme to be flexible in its approach was also an important factor.

Education and awareness about energy efficiency

In an attempt to offer free remote services to SMEs, the following was soon realised:

- ❖ The market was suspicious about whether there was a catch in receiving a free service
- ❖ Education about what Energy Efficiency meant was still a first step for many companies
- ❖ Companies preferred face-to-face interaction and “selling” in order to buy into the programme
- ❖ Word of mouth and building a reputation in the market helped leverage further clientele
- ❖ Announcing early or quick wins through our newsletters helped to secure other clients
- ❖ Training workshops were essential to delivering education of the market
- ❖ A business-to-business rather than business-to-consumer approach was required to marketing the programme
- ❖ The number of opportunities identified in the lifetime of this programme points further to the need for on-site awareness raising and education supported by the auditing process and sharing of this information with everyone
- ❖ More than 20 publications were produced for the support of education. A recommendation to the production of publications is that as far as possible these should be given as support on the back of training activity.
- ❖ Active campaigning through our website and social media played a key role in education and awareness raising of the PSEE’s offerings and events.

Showcasing achievements

Through marketing and communication efforts, over 20 case studies were produced and publicised. Achievements were also shared in our DVD through direct case studies, presentations and reports by beneficiaries.

In addition the number of opportunities identified, the technologies recommended, the payback periods defined, the actual and projected potential savings, etc. have all been an education in themselves about the opportunity and need for a more robust and ongoing intervention in supporting companies towards improved energy efficiency.

Project set up

This phase included:

- ❖ Clear project design with the technical assistance of the Carbon Trust
- ❖ Contracting and systems set-up to support the implementation of the programme
- ❖ Consultant selection and monitoring and evaluation design.
- ❖ Also important was establishing a positive office space, organisational structure of the team and recruitment.

This phase took six months with the project being launched in December 2013.

- ❖ A key lesson learnt out of this programme was that to achieve the full set of targets, it required a full three years at least to ensure successful delivery. Time was compromised to the extent that the project's actual delivery time was compressed into 18 months.

Recruitment and resourcing for implementation

While the services of a staff recruitment agency would have been useful, the need to put an together an eclectic set of skills combining both the technical engineering skills and sales capability was an important consideration. In order to deliver against very tight targets and deadlines, it was also important to implement rigorous performance management strategies and put in staff retention strategies to mitigate the risk of staff leaving. In addition, a culture of team building, mentoring and coaching was included to develop the team's performance. In the end, we succeeded in building a high performance team who were able to work under enormous pressure to deliver as close as possible to the actual targets.

The contracting process proved to be the most challenging hurdle to on-boarding large companies. In a number of instances it took close to a year to sign up these companies due to their own contracting processes which tended to be delayed by varying legal and procurement practices of each company.

While a vetting system was put in place for consultant selection, the need to supervise consultants through the account managers was a necessity. It served to ensure customer satisfaction and improve the performance of the consultants for the good of the companies and the programme overall.

Programme management

- ❖ Longer times for this type of programme is required for set up, brand building, pipeline development, full site surveys, eradicating barriers and assessment of impact
- ❖ Experience from the UK is not directly transferable to countries like South Africa where different conditions prevail
- ❖ The South African market is distrustful of a free service – a great deal of time and effort had to be spent on convincing the market that the programme was sincere and trustworthy.
- ❖ Prior market research would have been helpful. This would have enabled the programme to segment the market and design more targeted marketing campaigns
- ❖ Design the programme with the end in mind – to achieve the identified energy saving potential, partnerships with project financiers as well as technology suppliers.

Some lessons from working with businesses

- ❖ Lack of capacity and time given that energy efficiency is not their core business impacted on their ability to understand energy consumption data which they already have
- ❖ Lack of awareness as already stated
- ❖ Technical risks (reliability and operational risks) due to a shortage of credible and trustworthy technology suppliers with proven track records
- ❖ Need for policy direction from Government as well as incentives to finance projects which are too small for financial institutions and too costly for 12L
- ❖ A more robust step change in energy performance can be achieved through investment in energy efficient technologies when replacing end-of-life equipment, and during maintenance and renovations
- ❖ There is a clear need in South Africa for an energy efficiency programme of this nature to reduce demand on the grid – as demonstrated by the high numbers of companies coming through the programme

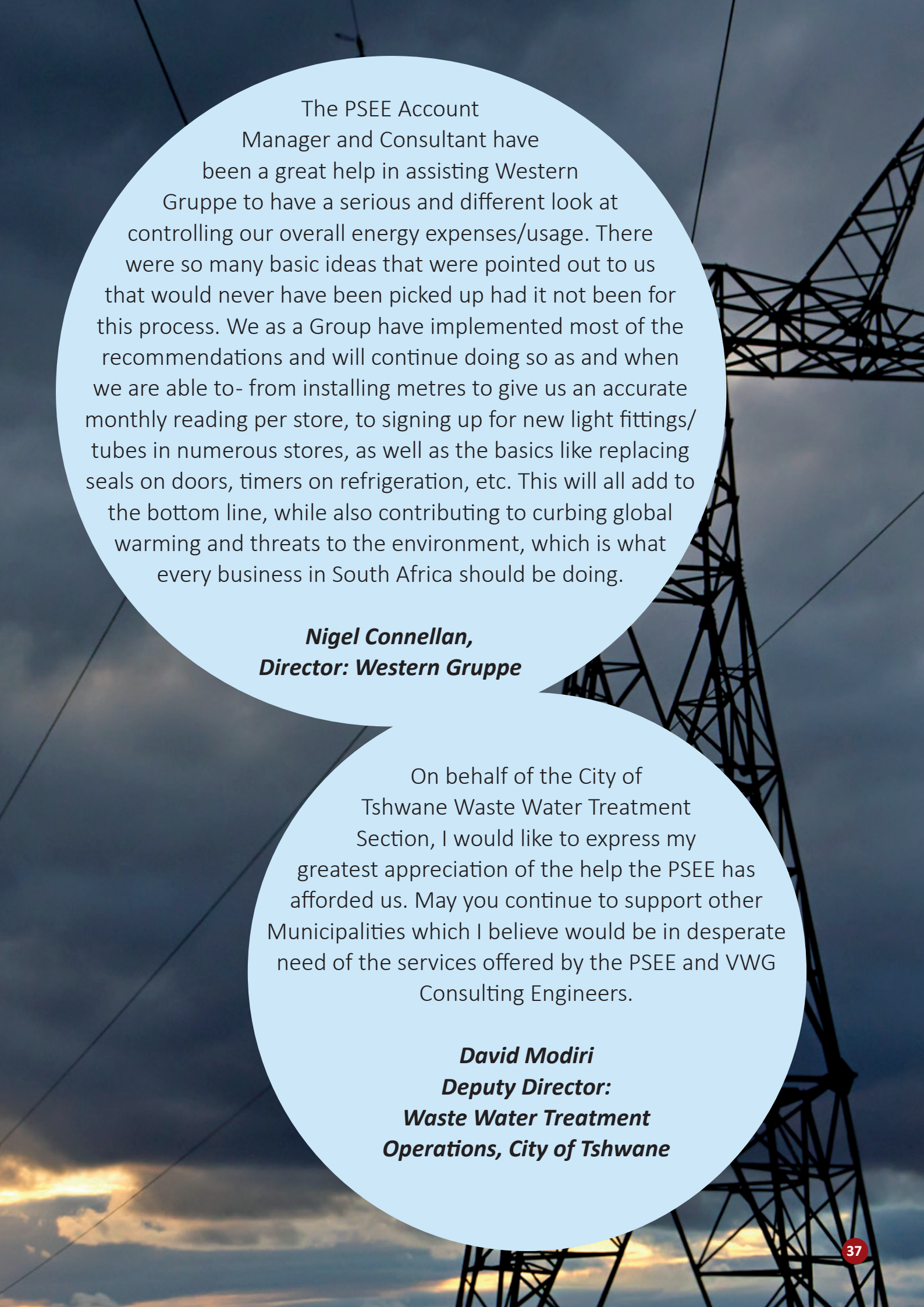
Concluding the programme

The PSEE Programme has succeeded in its mission to, through committed working partnerships with business, build a better, more efficient and energy-secure future for South Africa. While the programme came to an end in November 2015, the good work done by its many participants will continue and extend to other companies.

The PSEE Programme would like to thank all its participants and partners and wishes them much success on their energy-efficiency journeys.

It is in South Africa's best interest to reach a critical mass of sustainable energy-efficient companies. In the face of rising energy costs and energy constraints, in addition to tough economic times, it is imperative that we all pull together to reduce our energy consumption and look at ways of shifting to a sustainable, low-carbon economy that decreases our dependence on fossil fuels. We should use the challenges we are facing as the impetus to drive the necessary change, in a similar vein to how nations reacted after the global oil crisis in 1973.





The PSEE Account Manager and Consultant have been a great help in assisting Western Gruppe to have a serious and different look at controlling our overall energy expenses/usage. There were so many basic ideas that were pointed out to us that would never have been picked up had it not been for this process. We as a Group have implemented most of the recommendations and will continue doing so as and when we are able to- from installing metres to give us an accurate monthly reading per store, to signing up for new light fittings/tubes in numerous stores, as well as the basics like replacing seals on doors, timers on refrigeration, etc. This will all add to the bottom line, while also contributing to curbing global warming and threats to the environment, which is what every business in South Africa should be doing.

***Nigel Connellan,
Director: Western Gruppe***

On behalf of the City of Tshwane Waste Water Treatment Section, I would like to express my greatest appreciation of the help the PSEE has afforded us. May you continue to support other Municipalities which I believe would be in desperate need of the services offered by the PSEE and VWG Consulting Engineers.

***David Modiri
Deputy Director:
Waste Water Treatment
Operations, City of Tshwane***

Enquiries:

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