



The Voice of the Private Sector in Kenya

Climate Change and Your Business Briefing Note Series | April 2014

Kenafric Industries

Applying the Kenya Association of Manufacturers' Energy Audit Program to Reduce Emissions and Save Money



Photo credit: Kenafric

Recognizing the rising costs of electricity, Kenafric embarked on an energy management program to reduce costs and consumption, assisted by the Kenya Association of Manufacturers' (KAM) Centre for Energy Efficiency and Conservation's (CEEC) energy audit programme. CEEC's energy audits have increased Kenafric's competitiveness by achieving energy cost savings, which also secures significant GHG emissions reductions. Reduced electricity use has improved the company's profitability while lowering greenhouse gas emissions, contributing to the goal of Kenya's National Climate Change Action Plan 2013-2017 to develop in as low carbon a manner as possible.

Actions to Address Climate Change

Cost savings were the driver behind Kenafric's decision to embark on actions to reduce electricity consumption, but a substantive co-benefit is reduced greenhouse gas emissions. Participation in CEEC's energy audit programme highlighted the potential for energy and cost savings, and outlined effective actions for the company. The energy auditors from CEEC identified energy saving measures and estimated the energy savings that would result from the implementation of these actions.

Kenafric's electricity consumption reduction programme, guided by the energy audit, began with raising awareness among staff. Sensitisation programs aimed to create a culture of conservation in the company, stressing opportunities to reduce:

- Electricity use through such actions as turning off lights in empty rooms or where natural light is sufficient.
- Wasteful energy consumption by switching on machines only when production had started and turning them off when production had stopped, eliminating the idle running of production machines.

These two easy-to-implement actions reduced annual energy consumption by about one per cent, or approximately 66,000 kilowatt hours (kWh) per year.

Kenafric furthered its efforts by employing a data analyst to monitor, analyse and report on electricity consumption trends on a daily, weekly and monthly basis. The analyst then circulated these reports to all

production lines. Meters to monitor energy consumption were installed on individual machines, with the data analysed through Energy Management System software, which cost approximately Ksh 3 million. The analysis demonstrated that electricity consumption could be improved on some production lines by shutting down older machines and adjusting operational parameters (such as time and speed) on newer machines. **Some production lines were able to reduce electricity consumption**

Box 1: Kenafric and KAM

Kenafric Industries Limited is one of the largest manufacturers of confections, food, footwear and stationary products in Kenya. The company employs over 1,500 people and markets its products in 14 countries in Africa.

KAM's CEEC aims to cut energy consumption in industries and raise awareness of the benefits of renewable energy. The Centre runs an energy audit programme that is open to all companies doing business in Kenya, helping companies to assess energy consumption and identify energy saving opportunities. The energy audit services receive support from the Kenyan Ministry of Energy and the Danish International Development Agency.

Box 2: Energy Efficiency Programme Benefits for Kenafric

The benefits to Kenafric included:

- 20 per cent reduction in overall electricity consumption
- Costs of energy saving systems recovered in two years.
- Energy savings of 1,700 MWh, equal to approximately US\$280,000.
- GHG emission reductions of over 1,070 tonnes of CO₂e.

by as much as 50 per cent creating significant savings for Kenafric.

In recognition of Kenafric's smart business leadership and newfound culture of energy efficiency, the company received KAM's Energy Management Award in 2012. This award promotes excellence in energy management and recognizes enterprises that have achieved significant reduction in their energy consumption by implementing energy efficient measures and technologies. Kenafric also demonstrates a corporate commitment to environmental improvement beyond energy management, undertaking tree planting as part of its Environment Day activities.

Business Benefits of Climate-smart Action

Kenafric's actions resulted in a 20 per cent reduction in overall electricity consumption. Kenafric's analysis of the implementation of recommended energy saving

measures determined that consumption dropped from 1,674 kVA in July 2008 to 1,123 kVA in November 2011. **The costs of implementing the energy saving systems were completely recovered in only two years.** Electricity savings that extend beyond this cost recovery period result in direct monetary savings for the company. **The total energy savings achieved amounts to approximately 1,700 MWh each year, which is equivalent to US\$ 280,000.** Improved energy efficiency makes business sense, as well as demonstrating environmental leadership.

The energy savings also resulted in reductions of greenhouse gas emissions. Kenya's Updated Least Cost Power Development Plan explains that the electricity mix in 2011 was dominated by hydroelectricity, geothermal power and medium-speed diesel, which respectively accounted for 49, 29 and 21 per cent of electricity sent to the national grid. Based on these figures, **Kenafric's total reduction in greenhouse gas emissions is estimated to be over 1,070 tonnes of carbon dioxide equivalent (CO₂e).** (Emission reduction estimates have been calculated by ClimateCare using Kenafric's energy savings figures, as well as Kenyan grid dispatch data from January-December 2011).

In addition to Kenafric, the CEEC has conducted energy audits for almost 300 companies. Approximately 60 per cent are large companies with an annual average consumption of 12,000, and the rest are small or medium enterprises with an annual average consumption of 300 MWh. This has led to an average reduction in energy consumption of 329,400 MWh per year (approximately 15 per cent) or 207,500 tonnes of CO₂e each year since 2006. **Total greenhouse gas emission reductions associated with the electricity savings from energy audits from 2007 to 2014 are estimated to be 1,867,000 tonnes CO₂e;** a solid contribution of Kenyan indus-

try to the country's climate change goals. Energy efficiency and conservation can potentially unlock energy and cost savings for businesses in the processing and manufacturing sectors, and improving business competitiveness through energy efficiency can also have real implications for reducing greenhouse gas emissions and air pollution.

Acknowledgements

This briefing note was written by Samuel Alwala (Environment Cost Management Centre) and Deborah Murphy (International Institute for Sustainable Development). The authors thank Victor Ogalo, Kenya Private Sector Alliance, Maliza van Eeden and Margaret Kamau, Climate Development Knowledge Network, Tom Owino, ClimateCare, Scott McFatrige, IISD and Vinod Kumar, Kenafric, for providing useful comments.

For further information, please contact Victor Ogalo, KEPSA (vogalo@kepsa.or.ke), or Deborah Murphy, IISD (dmurphy@iisd.ca). Information about KESPA and its work can be found at www.kepsa.or.ke. Information about IISD and its work can be found at www.iisd.org.

References

Interviews:

- Mr Vinodh Kumar, Group Electrical Engineer, Kenafric Industries Limited.
- Mr Joseph Mwangi, Assistant Executive Officer, CEEC, KAM.

Government of Kenya (2013), National Climate Change Action Plan 2013-2017 (Nairobi: Ministry of Environment and Mineral Resources).

Kenafric (2013), About Us, <http://www.kenafriicind.com/index.php?id=2>.

Kenya Association of Manufacturers (2013), Energy Audit, <http://www.kam.co.ke/index.php/kam-services/energy-services/key-energy-products>.

Ministry of Energy (2011), Updated Least Cost Power Development Plan (Nairobi: Ministry of Energy).