

Student assists in making the CSIR more energy efficient

How much electricity does a PC left on standby over the weekend actually use? Does charging a cell phone's battery during the day rather than at night cost more? Are there ways to lower an organisation's energy bill by optimising the use of heaters, air conditioners and geysers, and can a building's design have an effect on energy consumption? In order to lower its own electricity bill, the CSIR is seeking answers to these questions.

Precious Chuma, a fourth-year chemical engineering student from UCT, is spending a couple of weeks at the CSIR, investigating these issues. She is the first student drafted by the CSIR to assist in an energy efficiency study, which has as its ultimate aim a 10% reduction in the CSIR's overall energy utilisation.

"Much of the research I am focusing on involves behavioural changes," says Chuma. "We are starting the project on a very basic level, first finding out exactly how much electricity the CSIR as a whole uses during peak, normal and off-peak hours. Then we will focus on case studies to see how that consumption can be reduced."

The CSIR is a significant consumer of electricity within the Tshwane Metro. As a result, the CSIR, along with Menlyn Shopping Centre, the University of Pretoria, the Tshwane University of Technology and Armscor, have been urged under emergency regulations to reduce energy consumption by 10%.

While the work Chuma is doing forms part of the CSIR's energy efficiency project, her case studies have so far delivered some interesting information. In the first study she investigated the typical office, found out exactly how much energy each electrical and electronic device in such an office uses, and suggested simple ways in which to reduce this.

She explains some of her findings: "PCs, for instance, use far more electricity than laptops. While it is not possible for everyone to have laptops, switching off your PC overnight and over weekends, instead of leaving it on standby, will save a great deal of energy. Also, air conditioners are much more effective when the doors and windows of the office are closed, and charging your cell phone with a USB cable as opposed to the conventional wall-plug charger during off-peak or normal hours also contributes to cost-savings."

Another case study involves energy consumption in laboratories. Here, Chuma specifically mentions extraction booths, air conditioning, having furnaces in air-conditioned laboratories and safety requirements for minimum air changes in working areas.

The student project forms part of an ongoing CSIR energy efficiency drive. Chuma is being guided by energy and processes expert, Dr Dave Rogers of CSIR Materials Science and Manufacturing and Professor Alan Brent of CSIR Natural Resources and the Environment, following a UNIDO cleaner production quick scan methodology.

Enquiries: [CSIR Communication](#)



Precious Chuma (right), a fourth-year chemical engineering student from UCT, is assisting the CSIR to become more energy efficient. Here she is pictured (from left) with Dr Mkhulu Mathe, competency area manager of energy and processes at CSIR Materials Science and Manufacturing, Dr Dave Rogers from the same area and Ndwamato Mutshidza, head of the CSIR Energy Efficiency project