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# Ekonomija energetske efikasnosti - 3E Enterprise Energy Efficiency - 3E

## USAID 3E PILOT PROJECT: Mechanical Engineering Faculty in Sarajevo



Letter of Commitment signing (USAID 3E – UNDP – MEF)

The Mechanical Engineering Faculty (MEF) building was selected as a pilot project for many reasons: the large energy savings potential; the possibility of replicating energy efficiency measures in other educational buildings; the possibility of donor co-funding and cooperation (UNDP); the great promotion potential provided by 1200 students, faculty and staff and annual enrollment of 250 students; and the fact that future heating system designers are being educated in the building.

Built in the 1960's, the Mechanical Engineering Faculty was constructed without adequate heating and insulation standards. This resulted in excessive annual heating expenses needed to ensure an environment adequate for the education and work of more than 1500 students and professors. Annual energy consumption before application of energy efficiency measures exceeded 100,000 BAM or 700,000 kWh per year – much more than what European standards allow for such buildings. The measures taken were retrofitting the heating system, replacement of windows and insulation of the building.



Building before the EE measures



Building after EE measures to be added

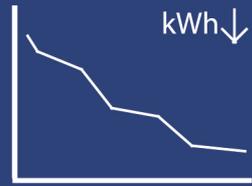
Project implementation started in Fall 2010, with the installation of a system for remote monitoring of energy consumption. This system collects energy consumption data on an hourly basis and began collecting data for the 2010-2011 heating season, to accurately establish the baseline before implementation of energy efficiency measures.

**The final results will be that the Faculty's energy consumption and related costs will decrease by 40-50%.**

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Initial comparisons between December 2011 and December 2012 show energy savings of more than 40%. What is most striking, however, is the transformation taking place in the Faculty itself. The project has transformed the way lectures are held. For the first time since the war, the professors are able to show the students a modern, efficient, automatically controlled heating system in their own building. The Faculty and students are planning a number of Master's theses and one doctoral thesis to start in 2012, related to energy efficiency in buildings, but based on empirical data from the energy monitoring system. Unlike at any other educational institution in BiH, the MEF's professors can give assignments and approve theses that use actual data from their own M&V system. This building represents the best possible laboratory with real-life conditions, and the faculty has found numerous ways to take advantage of it.

Energy Efficiency will also be introduced into the curriculum at MEF. It will be studied as a separate doctoral studies module, focusing on Renewable Energy Resources and Environmental protection. The studies represent a joint project of Delft, Barcelona, KTH and Estonia Universities.

**Facts:**

Overall project value	\$ 431,922.00
USAID 3E Contribution	\$ 100,000.00
UNDP/MDG-F	\$ 288,461.00
MEF Contribution	\$ 43,461.00

**RATIO: \$1 U.S. Gov : \$3.32 Partners**



Future state of the building after reconstruction

The project also shaped the vision for the future of the Mechanical Engineering Faculty. In cooperation with USAID, plans are being developed for reconstructing the war-damaged east building to house a Center for Science and Technology. The Center will consist of research institutes for each of the departments – manufacturing, power engineering, defense technologies and others. However, the major part of the Center will be the Multimedia Center for Energy Efficiency, which will serve to inform and educate citizens on effective and

attractive energy efficiency solutions that provide significant money savings and offer new business and employment opportunities.

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