

USAID INSIGHT

New Research and Education Center on Energy Efficiency Aims to Reduce “Brain Drain”

When Ukraine’s scientists take their knowledge and skills to other countries, the resulting “brain drain” limits the nation’s ability to compete and slows economic development. However, a newly created major research and education center for energy efficiency located in the Western region of Ukraine will create opportunities to attract and retain high-quality faculty, develop innovative educational programs that link coursework with current research, and facilitate collaborations connecting the center with Ukrainian and international research partners.

The new center, *Nanomaterials in Energy Generation and Accumulation Devices*, will carry out fundamental and applied research in nanotechnologies for energy efficiency such as cathode, solar-electric, and thermoelectric materials. Possible research areas include alternative energy, fuel cells, industrial and residential energy efficiency, and sustainable and renewable energy sources. By integrating research into a university curriculum, the Cooperation in Research, Education, Science, and Technology (CREST) Center will strengthen the universities research capacity and stimulate the development of new practical solutions and technologies to improve energy conservation and efficiency. The Center also provides information and training on best practices in energy use. The Center was developed through a partnership between USAID, the Ministry of Ukraine for Education and Science (MESU) and the U.S. Civilian Research & Development Foundation (CRDF).

The Center is located at the *Vasyl Stefanyk Precarpathian National University* in Ivano-Frankivsk, Ukraine. The university was chosen in a two-stage competition which included site visits by an expert team to four finalist universities. The center was officially opened on May 13, 2009. U.S. Ambassador to Ukraine William B. Taylor and Deputy Minister of Education and Science Maxim Strikha cut the ribbon at the new center.

This center is the second established under the bilateral CREST program and the first involving support from USAID. Modeled on a CRDF program in Russian universities, CREST aims to accelerate Ukraine’s transition to a knowledge-based economy by reinvigorating scientific research and higher education in Ukraine. CREST Centers strengthen the research capabilities of Ukrainian universities to meet economic and technological needs and train the next generation of young Ukrainian scientists in key technology fields.

The first CREST Research and Education Center, *Geotechnical Systems Stability*, was established in 2007 at the National Mining University in Dnipropetrovsk. This initial Center is focused on mining safety and environmentally sound mining techniques.

CRDF and MESU have identified several high priority areas of science and technology in which to establish additional CREST centers, including energy, agricultural sciences, information and communication technologies, and public health. CRDF is currently seeking additional support and partners for these centers.

USAID TO IMPROVE DELIVERY OF HEATING SERVICES TO UKRAINIAN CITIZENS

Municipal heating is a critical sub-sector of Ukraine’s energy system. Over the years, limited financial and technical resources have led to deterioration of the systems – increased inefficiencies on both the supply and demand sides and substantial losses in the distribution network. At the same time, dramatic fuel price fluctuations and dependence on imports diminished the system’s reliability, with significant social impacts and far-reaching economic consequences.



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With the implementation of proper reforms, the Ukrainian municipal heating sector has the potential to generate cost savings of up to \$2 billion/year. Thus, with the country’s economic survival and energy security at stake, the time may finally be right for heating sector reform.

To provide adequate and timely support to the heating sector, in February of 2009 USAID launched a three-year Municipal Heating Reform (MHR) Project, implemented by International Resources Group (IRG). The MHR Project will help Ukraine transform municipal heating into a financially viable, well-managed, and equitably regulated sector that delivers reliable, quality services at affordable prices to the population, public institutions, and local industries. Working closely with the National Government of Ukraine (GOU) and local governments, the MHR Project will strengthen the legal, regulatory, and institutional framework leading to the improvement of heating services, tariff regulations, and compliance with EU legislation in this sphere.

In order to enhance the capacity of municipalities to plan, manage, and fund the

development of heating systems, the MHR Project will select 20 cities for implementation of pilot projects. These projects will include municipal energy assessments, development of municipal energy plans, specification of metering equipment, assistance to the municipalities in obtaining financing for energy efficiency projects, implementation of energy efficient technologies and methodologies, and monitoring the results of the projects. By facilitating the establishment of condominium and home-owner associations, the project will also focus on improving collective action in condominium management and increasing financial responsibility among homeowners.

Additionally, the MHR Project will launch a multi-faceted national information and outreach campaign to educate citizens and will increase public awareness and participation in MHR activities focused on energy efficiency. The campaign will target lower and middle income groups and highlight ways to improve the quality of utility services, reduce heating costs, and enhance the condition of common spaces through energy efficiency and home improvements. A specific focus of the campaign will be on youth education as the most effective method for creating sustainable change in the future. By engaging students in green schools and campuses, the MHR Project will provide information on how to reduce

energy costs by 5 to 15 percent through no-cost, behavioral and operational changes initiated by students, teachers, and facilities staff working together. The MHR Project’s public outreach activities will also explain to the public and executive authorities the benefits of proposed legislative changes, tariff reform, and measures being implemented to provide a social safety net.

The MHR Project’s key partner is the Ministry of Housing and Communal Services. The implementation of individual project components will also require active engagement of the Ministry of Fuel and Energy, the Ministry of Finance, and the Ministry of Regional Development and Construction as well as the National Electricity Regulation Commission, the National Agency of Ukraine for Efficient Use of Energy Resources, and the Association of Ukrainian Cities.

IRG will work in collaboration with the Alliance to Save Energy, RTI International, Taylor-deJongh, and Ayrliie Partners from the U.S., EnEffect-Consult from Bulgaria, and Ukrainian partners – the Municipal Development Institute, Energy Efficient Cities of Ukraine, JurEnerg, and OptimEnerg.

SMALL CITIES FORM PARTNERSHIPS FOR BETTER ENERGY USE

Ukraine has one of the most energy-intensive economies in the industrialized world. Low energy efficiency, high vulnerability to price fluctuations and dependence on imports are among the main energy sector problems. Public and residential buildings consume up to 40% of the country's energy usage. Another problem is the consistently deteriorating state of public infrastructure, particularly heating and lighting systems. The poor technical condition of these systems in municipal hospitals, schools, and kindergartens prevents these vital public entities from receiving adequate services. Most residential and public buildings are heated by district heating systems that were built in the early 1970s. In addition to lacking efficiency, they pose safety risks by causing heating accidents and breakdowns, as well as profound environmental pollution.

Though billions of dollars of investment are required to fix the country's entire communal infrastructure, USAID believes that introducing and adopting energy-efficiency technologies can be a step toward resolving this critical issue. Therefore, USAID, together with East European Foundation (EEF), decided to focus on community-driven energy efficiency projects. EEF's Partnership for Better Energy Use Program is designed to involve both local governments and communities in raising awareness of the energy efficiency issue. The project is based on two approaches: engaging the citizenry in the process of developing a new energy policy and introducing new technologies to the municipal energy sector. Partnerships in Slavutych, Kyiv Oblast, and Voznesensk, Mykolayiv Oblast, are just two examples of how, by introducing alternative and energy-saving environmentally friendly technologies, the local authorities together with residents stepped forward to address this important issue.



East Europe Foundation Executive Director Victor Liakh (left) and Voznesensk Agency for Economic Development Project Director Sergei Averkov examine wood chips, part of the city's energy efficiency initiative (Photo credit: Simone Kozhukharov).

Voznesensk Enjoys Alternative Energy, Protects Environment from Harmful Waste

Voznesensk, a small town in Mykolayiv Oblast, easily disappears on any map, but when it comes to energy efficiency, this tiny city burns brighter than most of the cities and uses less power while doing it, thanks to East Europe Foundation, USAID, and the Norwegian telecommunications company Telenor.

"Each inhabitant of the city must think about energy efficiency, both at home and at work, or else we will have problems," Mayor Yuriy Gerzhov said. "I, in fact, did not expect such support from residents, such citizen awareness."

East Europe Foundation, which receives funding from USAID through Eurasia Foundation, awarded the Agency for Economic Development of the City of Voznesensk a \$25,000 grant to introduce a system of organic waste management. The agency helped the local community initiate the separate collection of organic waste, which is now being utilized by communal enterprises for composting and the production of fuel pellets.

The agency is also conducting an informational campaign to mobilize resources and work with the government on the local level to calculate tariffs and draft the necessary legislation to implement them. Through the project, Voznesensk is enjoying alternative energy sources and helping protect the environment from harmful waste.

Energy efficiency is a vital part of Ukraine's push toward modernization as it joins the global search for cost-efficient, energy-saving resources that protect the planet and the pocketbook. Thanks in part to USAID's support, Voznesensk has become a beacon in Ukraine's effort to save energy, and government officials from neighboring towns have descended upon the

little city to draw upon their best practices.

"The fact that this project was so successful serves as an inspiration for new initiatives," Mr. Gerzhov noted.

Boris Karpus, the chairman of the Novovolynsk city council's Economic Policy and Investment Department, traveled nine-hour/820-km to Voznesensk to study one of the country's newest advances in energy efficiency.

"Our city, just as every city, is thinking about introducing energy efficiency approaches. I came here to see the results of the project. I am impressed by the synergetic effect. The program was very well thought out, introducing a multifaceted solution to deal with everything from waste collection to the production of pellets and the heating of municipal buildings. We began cooperation with Voznesensk earlier within the framework of a UNDP municipal program. At the same time, our cooperation has expanded, and we are trying to share best practices in all spheres," he said.

Slavutych Installs New Heating System at Schools

Ukraine's Soviet heating system is inefficient and costly, but the majority of the country still relies on it to keep warm during the harsh winter months. One small town is hoping to show the rest of the country that there is a better way.

Slavutych was founded in 1988 to accommodate the families of Chernobyl workers after the nuclear disaster forced the evacuation of nearby areas. Now, Ukraine's newest town is also among the most energy efficient, partially thanks to USAID and the Norwegian telecommunications company Telenor, whose grants to East Europe Foundation paid for new heating systems at local schools and helped save almost 30% of the school budget annually. The City Council agreed to allocated the funds saved on energy to school development and thus, to motivate school administrations and students to be more responsible with their energy use.

"We'll save on energy and spend the money on the kids," Slavutych Deputy Mayor Yuriy Ostryanin said enthusiastically as he explained the benefits of the new system to a group of journalists.

The new system, which will regulate the school's heating system, includes meters, timers and data counters, as well as a temperature control panel. This is a far cry from the old, centrally controlled, Soviet heating system activated according to the time of year, not the weather.

The new system allows for facility administrators to control the temperature according to need. Energy, money, and resources are saved as the children go home for the day or on weekends, and the temperature is allowed to drop. However, with the support of USAID, the building will be toasty again for students by the time they arrive for their classes each morning.

"We have reached the point where we can no longer leave things as they are, it's time to implement change," Slavutych Mayor Vladimir Udovichenko said. "Energy efficiency should be a priority for every mayor, public official and citizen."