



## Learning About Energy Efficiency in the Higher Technical Education System of Kazakhstan

Kazakhstan

Tatiana Shakirova, PhD

Address: 40, Orbita-1, Almaty, 050043, Almaty, Republic of Kazakhstan;

e-mail: tshakirova@carec.kz; tatiana\_shakirova@yahoo.com



*Education, in addition to being a human right, is a prerequisite for achieving sustainable development and an essential tool for good governance, informed decision-making and the promotion of democracy. Therefore, education for sustainable development can help translate our vision into reality” (the UNECE Strategy for ESD, 2005).*

The project ‘Education for Sustainable Development & Energy Efficiency’ for the Higher Technical Education System of Kazakhstan was implemented in 2008-09 by the Regional Environmental Centre for Central Asia (CAREC), in cooperation with the Kazakh National Technical University (KazNTU), Chevron and the GEF Small Grant Program (SGP) of UNDP. It promoted education for sustainable development (ESD) in the pilot university, KazNTU, by introducing a bachelor-level course called “Energy Efficiency and Sustainable Development” and by developing recommendations for cross-curricular integration of sustainable development (SD) themes at KazNTU. The initiative established a strong partnership between the various project partners: inter-agency collaboration between the Ministry of Environmental Protection (MEP) and the Ministry of Education and Science (MES) of Kazakhstan, and inter-sectoral cooperation between governmental, non-governmental sectors, and business organizations. The project involved the widest range of stakeholders within Kazakhstan, from the MEP, MES, to teachers and students at the pilot university, as well as the following NGOs: “Baiterek”, “EcoObraz”, “EcoCenter-Karaganda” and “Otrazhenije”. Moreover, international organizations such as CAREC and SGP GEF UNDP were involved, as well as members of the private sector, such as Chevron.

The speed of industrial development in Kazakhstan has created the need for a new generation of engineers with expertise in sustainable energy technologies. In Central Asia, education is given strategic emphasis as key to addressing environmental degradation and resource depletion. The country’s unique geopolitical positioning means that it also benefits from ESD initiatives arising in both the United Nations Economic Commission for Europe (UNECE) and the Asia-Pacific region (APR).



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### Kazakhstan

The overall objective of the project was to integrate ESD principles, values and methodologies, and to promote new technological approaches at KazNTU the pilot technical higher education (HE) institution. The following ESD learning approaches were used during project implementation:

- Learning by doing
- Learning together
- Learning from each other
- Learning for a better future
- Learning for Sustainability.

From the outset, the university teachers were fully involved in the project activities, participating in the development of the new course and its electronic textbook, writing the methodological Guide for teachers and taking part in the introduction of the course at KazNTU. KazNTU teachers and students became more actively engaged in SD, climate change and sustainable energy issues via a series of training activities. The project effectively combined theoretical knowledge (seminars and training for teachers and students on SD, climate change and energy efficiency) with practical activities (on-site competition for students' pilot projects on energy saving and energy efficiency in the KazNTU).

The CAREC network on ESD allowed for dissemination of the project results across the Higher Technical Education system in Kazakhstan (via an additional Methodological Seminar for Kazakhstani technical universities) and more widely in Central Asia (via Sub regional Conferences, seminars and meetings on ESD).

The project contributed to the promotion SD through ESD approaches as follows:

- **Educational:** The new subject area of "Energy Efficiency & SD" was supported by the MES Kazakhstan and was introduced into the Higher Technical Education System of Kazakhstan. The experiences from this pilot project have been disseminated across the Higher Technical Education system of Kazakhstan via the Republic Methodological Seminar. There has also been improvement in levels of cooperation between educational (MES and MEP) sectors due to participation in the project. The awareness-raising and capacity-building among KazNTU teachers and students continues to expand, with new ways of sustainability-focused thinking and decision-making guiding the future generations of Kazakh managers and engineers.
- **Environmental:** Students of the Technical Higher Education System of Kazakhstan will be the future managers and engineers working in the oil, gas and metallurgic sectors of Kazakh industry. Their new knowledge, skills and competences will lead to changes in behavior and decision-making processes on issues of sustainable energy, energy efficiency and the introduction of renewable energy sources in Kazakhstan. This will lead to informed decision-making and help to reduce negative impacts on the environment.



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## Kazakhstan

- **Social:** Through educational opportunities, young people are empowered as change agents for sustainability. In future years, they will show leadership and advocacy to address climate change and energy efficiency in universities, offices and homes, as well as helping to shift understanding and actions to promote energy saving among friends, families and neighbors.
- **Economic:** The skills and understanding generated by this project, applied in the development of engineering education and across industries, contributes to significant economic savings in organizations and homes due to more informed use of energy saving technologies and renewable energy sources.



### Appendix 1

<b>References</b>	<p><a href="http://www.carecnet.org">www.carecnet.org</a>; <a href="http://www.caresd.net">www.caresd.net</a>, <a href="http://www.ekois.net">www.ekois.net</a>; <a href="mailto:news@caresd.net">news@caresd.net</a>; <a href="mailto:ecopravda@econavigator.info">ecopravda@econavigator.info</a>; <a href="mailto:dariya@ecoidea.kz">dariya@ecoidea.kz</a>; <a href="mailto:novosti@ekois.net">novosti@ekois.net</a>; <a href="mailto:indira@ekois.net">indira@ekois.net</a>; <a href="mailto:news@caresd.net">news@caresd.net</a>; <a href="http://www.energyville.com/">http://www.energyville.com/</a></p>
<b>Photos, press clippings, video materials</b>	<ul style="list-style-type: none"> <li>• Agenda and pictures of the Republic Methodological Seminar in the Kaz NTU on experience of development and prospects for introduction of the new subject «energy efficiency and sustainable development» hold on 12-14 May 2009 Almaty, Kazakhstan;</li> <li>• Cover of the electronic textbook on the new Course on CD;</li> <li>• Cover of the Methodological Guide for teachers;</li> <li>• The game “Energyville” presented by Chevron as an input to the project and disseminated among teachers and students through the electronic textbook on the new Course on CD.</li> </ul>