

Belarus: Energy Efficiency in Public Buildings



Effective use of energy, increased energy self-reliance and reduced environmental emissions in Belarus

Overview

The project helped to address the key priorities for the government of Belarus - reducing the country's energy dependency and increasing energy efficiency. Pupils, teachers, doctors and patients received improved heating and lighting services in 745 social sector buildings in all regions of Belarus. Heat consumption has been reduced by 50 percent, electricity consumption has been reduced by 15 percent.

Challenge

In the 1990s, the government of Belarus requested the World Bank to provide support to improve energy efficiency in public buildings. The health and education subsectors suffered from a lack of funds, while energy was wasted in heating and lighting poorly designed and maintained facilities – resources that could be used for more direct sector purposes such as books, medicines and equipment. The habitability and functionality of social sector buildings was impaired by poorly balanced and unstable thermal environments which interfered with the learning and healing missions of the facilities. In addition, lighting levels and lighting output characteristics were below rudimentary standards and caused eyestrain and irritation.

Implementation of the government's National Energy Savings Program to improve energy efficiency through replacement or installation of new energy saving equipment required significant financial resources.

Approach

The issues addressed in the project included measures to improve the functional and health environments of social sector facilities, with particular emphasis on reducing energy consumption. The project retrofitted social sector facilities to encourage a more effective use of resources, reducing operating and maintenance costs in schools, medical and other selected social facilities such as orphanages and community homes for the elderly and the disabled. The project had two main components: (a) energy retrofitting

MULTIMEDIA



More Results



745

Heating and lighting services have been improved in 745 social sector buildings in Belarus by December 2010.

50%

Heat consumption has been reduced by 50 percent, and electricity consumption by 15 percent.

measures in schools and medical facilities and associated supply-side improvements, including building envelope and heating system improvements as well as conversion or replacement of individual autonomous boilers, and (b) technical assistance to support project implementation, including technical and financial audits, continuation of the public awareness campaign, training for Project Management Unit staff, and financing of studies and workshops.

Results

The project closed in December 2010, and the final results were:

- A total of 207,100 students, teachers, patients and medical staff have benefitted from the improved facilities;
- Some 745 social sector buildings have been retrofitted with energy efficiency improvements, and 300 educational facilities have received lighting improvements;
- In all, 42 boiler houses and 541 heat substations have been renovated;
- Eight demonstration sites displaying energy efficiency measures have been commissioned;
- Windows in 84 social sector buildings have been replaced with energy efficient models;
- Increased comfort in the public and residential sectors and improved health indicators (e.g., children's eyes suffer about 15-20 percent less at school lessons, and there has been a 20-30 percent reduction of diseases and accidents at a number of schools). Luminosity was increased from 200-300 to above 500 lux, at the same time allowing savings of 15 percent of consumed electricity.
- Significant reduction in energy consumption in the improved facilities - total annual saving of fuel and energy resources amounts to 243,300 megawatt hours/year.
- The project-associated reduction of CO2 emission is 40,000 tons/year.
- Increased participation of beneficiaries (teachers, students, parents and hospital staff) in energy efficiency efforts and use of social facilities. (e.g., creation of Energy Efficiency Museum in Gomel; participation of all schools in Energy Efficiency Days, etc.).

MORE INFORMATION

- » Belarus Social Infrastructure Retrofitting Project, approved June 5, 2001, closed December 31, 2010
- » Social Infrastructure Retrofitting Project – Additional Financing
- » Results Brochure (2007)
- » Energy Efficiency Department of the State Standardization Committee
- » Ministry of Energy
- » Result story "Secondary school #33 - reduction of energy consumption by 14 percent" (2008)
- » Result story "World Bank Team Visits Minsk's Gymnasium #8 to see Progress"

Bank Contribution

In 2001, a US\$ 22.6 million IBRD loan and an associated US\$ 1 million PHRD grant for climate change were approved, followed by a US\$ 15 million additional financing in 2007. The grant financed the conversion of Bolovliany boiler plant to biomass.

The Bank-supported *Study on Increasing Domestic Production of Energy Resources in Belarus* assessed wood and peat resources of Belarus, estimating investment needs in fuel supply and energy production, and provided the cost-benefit analysis of the viability of large-scale biomass projects, including an estimation of the break-even price of natural gas.

Partners

The Bank supports the government's national energy efficiency programs. The Bank team worked closely with the Energy Efficiency Department of the State Standardization Committee

and its Project Management Unit "RUE Belinvestenergoberezhnie", as well as with the Ministry of Energy and the Oblast Executive Committees.

Moving Forward

Over the last 15 years, Belarus has made significant progress in improving energy efficiency. Several national energy efficiency programs have been adopted and investments in energy efficiency reached about US\$ 3.86 billion. Energy self-reliance has also improved as indicated by the increase in local fuels in the country's energy balance.

Successful implementation of the Social Infrastructure Retrofitting Project paved the way for the next World Bank operations in Belarus, including Post Chernobyl Recovery Project and Energy Efficiency Project, and contributed to the dialogue on broader energy sector reforms. The government expressed interest to continue cooperation with the Bank in the area of energy efficiency.

Beneficiaries

- Viktor Mikhnev, Deputy Director, National Hematology and Transfusiology Center, Minsk: *"Automated boilers have reduced heat consumption by 40-50 percent. This year alone savings from reduced energy consumption have made 18 percent. This has helped us to cut costs, which is critical for organizations financed from the public budget. Now we need well-established companies to ensure high-quality maintenance."*
- Manager, Secondary School No. 3, town of Nesvizh, Minsk Oblast: *"Before, whenever the sanitary and epidemiology authorities visited us, they always had complaints – bad lighting, too dark. But we could not do anything. Now they are happy with us. And we are happy. There's enough light in the classrooms. And no more complaints."*