Improving Energy Efficiency in Residential Buildings in the Republic of Belarus (2012-2016)

The project is planned for a five-year implementation period and aims at reducing the energy consumption during the residential buildings construction and the following maintenance, as well as reducing the carbon pollution that contributes to the climate change.

The project focuses on developing and ensuring the effective implementation of new methods in residential buildings design, as well as construction standards and energy efficiency certification schemes.

The project is realised by the United Nations Development Programme with the financial support from the Global Environment Facility.

The Department on Energy Efficiency under the State Committee on Standardization of the Republic of Belarus acts as the National Implementing Agency of the project.

The project’s main partners are the Ministry of Architecture and Construction of the Republic of Belarus, JSCo “MAPID”, RUE “Hrodnagrazhdanproekt”, Mahilou Regional Executive Committee.

The key project’s objectives include:

- Strengthen the legal and regulatory framework, as well as legislation implementation mechanisms aimed at improving the energy efficiency in the residential building sector.
- Facilitate the capacity of Belarusian specialists to effectively implement and apply the new energy-saving standards and construction norms.
- Demonstrate the energy and cost-saving potential of new energy efficiency measures by implementing three pilot construction projects.
- Improve awareness of industry experts and general public on the energy efficiency issues in the residential sector.
- Establish monitoring and replication mechanisms to ensure the project’s results reproduction in Belarus.

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United Nations Development Programme (UNDP) plays an important role as a key strategic partner to the Government of Belarus in developing energy efficiency policy and programmes.

UNDP supports the Government of Belarus to achieve its GDP energy intensity reduction target through the international technical assistance project “Improving Energy Efficiency in Residential Buildings in the Republic of Belarus” funded by the Global Environment Facility (GEF) in the framework of its Climate Change focal area strategy.

Project budget:
US$ 4.9 million
GEF: US$ 4.5 million
UNDP: US$ 400,000
Since June 2014, the project has achieved the following:

A detailed comparative analysis of existing gaps between the energy efficiency housing standards in Belarus and the European Union has been completed. This research provides a basis for a roadmap that includes a list of technical regulatory acts subject to further development and adoption. Many of these documents have been added to the Events Action Plans on the standardization and regulation in the field of energy efficiency and energy saving in the construction sector for 2014-2017. Our project together with RUE ‘Stroytehnorm’ has initiated the development and has prepared the first variant of the ‘Energy Efficiency for the Buildings’ Technical regulations’ that is the most important legislative regulatory document in this field.

A successful energy audit of the 30 residential buildings has been completed using IPMVP protocol and “eeMeasure” contemporary software application. We have prepared recommendations and updated the guidelines for improving the residential buildings energy audit practices. During the three training sessions organized by the project in September, October and December 2014 around 100 professionals improved their skills and knowledge in the field of contemporary energy audit methodologies for residential buildings. The project has analyzed practices of designing residential buildings with a minimal energy consumption and has proposed the latest solutions for the heating and hot water supply systems; has developed a basic framework for the energy efficient residential buildings certification; has provided recommendations on the university curriculum content concerning the issues of the energy efficient residential buildings design and maintenance. The outcomes of this analysis have become fruitful grounds for discussions at eight roundtable seminars and three international conferences organized by the project for the energy efficiency and construction sector professionals.

Thanks to the two study visits to Austria (in March and September 2014), as well as visiting the 11th International Exhibition of Sustainable Design, Construction and the Built Environment ‘Ecobuild 2015’ in London (March 2015) and the 19th International Passive House Conference 2015 Leipzig, 38 Belarusian professionals have got acquainted with the contemporary technical regulations of the energy efficient buildings construction, innovative methodologies of calculating, surveying, designing and constructing the energy efficient residential buildings and studied the best practices of using the current technical solutions including the use of renewable energy sources for housing units heating and hot water supply.

The project has recently completed the preliminary stage for building three pilot energy efficient multi-apartments in Minsk, Hrodna and Mahilou. The construction sites have been identified, the design and estimate documentation have been developed as well as the specifications for technical installations, machines and tools necessary to improve the energy efficiency. The procedure has been launched to procure the energy efficient engineering equipment.

The first model house is a 19-storey, 133-apartments building in Minsk with a total area of 10,000 m². The developer is the state-owned construction enterprise “MAPID”. The second is a 10-storey house in Hrodna with 3-entrance, brick partition crosswalls and the outer walls made of foam concrete blocks. The 120-apartment building with a total area of 9,834 m² is being developed by RUE “Hrodnagrazhdanproekt”. The third project located in Mahilou is a 10-storey, 4-entrance residential building with 180 apartments and a total area of 13,400 m². The developer is the Mahilou Regional Executive Committee.

The baseline design of the buildings is relying upon the existing construction norms and thermal standards and envisages water heating system connected to the district heating system with radiators, thermostatic valves and heat meters installed in every apartment as a standard design feature. UNDP/GEF project contribution covers the additional energy efficiency measures costs equal to 15% of the basic investments. These measures, among others will include: (i) an increased thermal shielding of the building’s envelopes; (ii) door-to-door mechanical supply-and-exhaust ventilation system with 80%-90% exit air heat recovery for heating systems; (iii) solar collectors, heat pumps utilizing soil heat potential through foundation piles, recuperative heat exchangers and heat pumps to utilize wastewater heat potential for hot water supply systems; (iv) roof PV-panels. The energy consumption for the model buildings heating is expected to be under 25 kWh/m² per year, and the heat consumption for hot water supply will be cut by at least 40% compared to the existing buildings.

Project website: www.effbuild.by