

## Energy efficiency improvements in public buildings in Lutsk, Ukraine

The Ukrainian economy is energy intensive with inefficient energy use and the District Heating system, in particular, is in urgent need of modernization. While energy independence on national level is crucial, yet on local level the inefficient use of fossil fuels creates additional expenditures to be covered by municipalities.

The administrative centre of the Volyn district, the City of Lutsk, located 400 km west of Kiev, has 217,000 inhabitants. Since 2009, Lutsk City Council is a signatory to the Covenant of Mayors, a major initiative of European cities that involves local and regional authorities in the management processes of sustainable energy, development and climate protection. As a signatory of the initiative, Lutsk has committed to reducing energy consumption by 20% by the year 2020.

The main part of energy consumption in public buildings in Lutsk comes from heating. Nearly all of the buildings in the project are connected to the Lutskteplo district heating system operating 63 boiler houses currently with gas as fuel in 99% of the production.

### Scope of project

A feasibility study has identified the scope of project to address energy efficiency measures in 40 public buildings in the City of Lutsk, focusing on schools and kindergartens with a total of 26.000 children, teachers and other visitors.

The planned measures have been selected based on a cost-benefit ratio to reduce heat consumption, reduce the costs of heating and reduce CO<sub>2</sub> emissions as well as improving indoor climate in public buildings.

Measures include insulation of facades and roofs; replacement of doors and windows; replacement of lighting and kitchen equipment; as well as installation of individual heat substations; and some replacement of piping.

### Expected savings:

- Heat consumption to be reduced by 60%, which equivalent to 10,618 Gcal / year.
- Electricity consumption to be reduced by 35%, that is, 639 MWh / year.
- CO<sub>2</sub> emission to be reduced by 4,282 tonnes / year.
- Cost-savings on average 600,000 EUR / year

### Expected benefits

- Lower fuel costs
- Improved comfort level for the people - a total of 26,000 children, teachers and other visitors
- Environmental benefits

### Other expected advantages

- Prolonged lifetime for the buildings
- Improved learning conditions for the school children

### Expected benefits in numbers

ANNUAL SAVINGS					
	HEAT		ELECTRICITY		CO <sub>2</sub>
	Gcal	EUR 1000	MWh	EUR 1000	Tonnes
Facades	3,379	169	80	9	1,260
Windows	865	43	21	2	323
Roofs	2,487	125	59	6	927
Doors	150	8	4	0	56
Ventilation	172	9			64
ITP	945	47			337
Pipe Insulation	2,445	122			873
DH Pipes	175	9			62
Lighting			336	36	269
Kitchen			139	15	111
<b>TOTAL</b>	<b>10,618</b>	<b>532</b>	<b>639</b>	<b>68</b>	<b>4,282</b>

### Financing

Total investment for the project is EUR 7.3 million. In addition to NEFCO, the Eastern Europe Energy Efficiency and Environment Partnership (E5P) will support the project with EUR 1.3 million in grant funding and the city itself will contribute with EUR 1 million. Sweden has financed the feasibility study and will also contribute with EUR 0.3 million financing for technical assistance to the project implementation unit.

NEFCO	EUR 5.0 million
E5P	EUR 1.3 million
City of Lutsk	EUR 1.0 million
Sweden	EUR 0.3 million
<b>TOTAL</b>	<b>EUR 7.6 million</b>

## About NEFCO

Nordic Environment Finance Corporation NEFCO is an international financial institution (IFI) established by the Nordic countries in 1990. All of NEFCO's activities focus on generating positive environmental impact. NEFCO finances and implements projects related to climate change prevention and green growth investments across the world. Over the years, NEFCO has financed more than 1000 small and medium-sized, private and public sector projects across different sectors in 60 countries, with a strong emphasis on Eastern Europe, the Baltic Sea, and the Arctic and Barents regions.

Headquarters is located in Helsinki, Finland, and NEFCO also has an office in Kiev, Ukraine, and consultants in St Petersburg, Russia. Read more at [www.nefco.org](http://www.nefco.org).

## About E5P

The Eastern Europe Energy Efficiency and Environment Partnership (E5P) is a €180 million multi-donor fund managed by the EBRD and designed to promote energy efficiency investments in Ukraine and other eastern European countries. The fund was established under an initiative of the Swedish government during its presidency of the European Union (EU) in 2009. E5P complements energy efficiency loans provided by financial institutions including the European Bank for Reconstruction and Development, the European Investment Bank, KfW, NEFCO and the World Bank Group. Contributors to E5P are the EU and the US, as well as Denmark, Estonia, Finland, Germany, Iceland, Ireland, Latvia, Lithuania, Norway, Poland, Slovak Republic, Sweden, Switzerland and Ukraine.

## NEFCO

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