Karlovo – BG

SEC Tools

→ Good practice example

Pilot action community: Karlovo, Plovdiv Region, Bulgaria

Type of energy consumption:

☑ heat energy ☐ hot domestic water ☑ electricity ☐ water

Use of renewable energy resources (potential or actual):

☐ biomass ☑ wind energy ☐ geothermal energy ☑ solar energy ☑ hydroelectric power station

Rational use of energy:

☐ sustainable building systems, low energy housing ☑ building thermal modernisation ☑ modernisation and upgrading of the heating systems ☑ modernisation of lighting ☐ balanced/sustainable transport

The key aims of the pilot actions to accomplish energy renovation of all public buildings, and to undertake campaigns for raising awareness of sustainable energy.
Five kindergartens – Vasil Levsky, Slance, Gina Kuncheva, 1st June and Zornitsa – have been renovated using ESCO-contract. The implemented measures – improving the efficiency of the heating system and thermo-modernization of walls and roofs – decreased dramatically the specific energy consumption of the buildings from 388 to 119 KWh/m²/y or 105 000 Euro in the municipal budget.

→ Community

Short description containing:

Geographical position	The Municipality of Karlovo is located in a semi-mountainous area in the Rose Valley. in the northern most part of Plovdiv District. The territory of the Municipality is 1030 sq.km, which accounts for 1% of the territory of Bulgaria. Karlovo is 140 km to the east of Sofia, the Bulgarian capital, and 56 km to the north of the second biggest city in Bulgaria, Plovdiv.
Main profile of activity in the region	machinery construction, dairying, tailoring, food processing industry, cosmetics and perfumery, wine production, tourism
Number of inhabitants	29 000
Important institutions	Banks, Court, Post Office, Police Station, Forest Administration

Energy data:

Energy supply (number of households or customers)	Public buildings and residential energy consumption of about 5 000 householders
Energy consumption [GJ]	934 300 GJ (3 363 500 MWh)
Total heated flat area [m²]	74 000 (Public)
Type of fuel (for heat energy)	oil, coal, wood, electricity

Climatic data: (selected data important for the described case)

Average yearly temperature	11,4 °C
Average of heating days per year	150
Days of sunshine per year	258
Mean wind speed	2,9 m/s

→ Context

The public buildings in Karlovo haven't been renovated for more than 25 years. In addition to their bad appearance, their energy performance is far below the recent regulation. With the increase in energy prices energy expenditures became impossible for the Municipality to pay. Indoor comfort has reached an unacceptable level.
The Municipal development plan envisages LNG supply. That is why the Municipality undertook renovation of the public buildings. The main purpose was defined to decrease the energy consumption and to increase comfort, improving the quality of life and diminishing health risks. The pilot action started with renovation of the kindergarten and schools.

Intelligent Energy Europe

Karlovo – BG

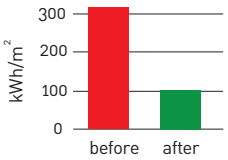



→ Experience of the city

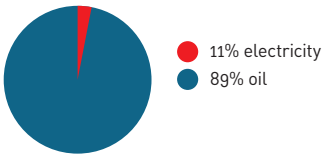
Partnership process: After a long discussion period in the autumn 2006, the Municipal Council of Karlovo took a decision for energy efficiency measures implementation in 5 kindergartens – total area 8 700 m². Municipal chancellors voted for using ESCO- contract that is now well recognized by the Energy Efficiency Law as an energy renovation tool. Energy audits were prepared by the ESCO company. The project was implemented 6 months ago.


Technical data:

Specific energy consumption before and after Energy Efficiency Measures



Energy consumption of five kindergartens



→ Cost and benefits

Economical: In preparing the energy audits, it was calculated that all the nursery schools spend 177,948 EUR annually for an energy consumption of 2,503 MWh. The agreed-upon investments of 855,747 EUR were provided by the ESCO company for all the nursery schools. Their payback period was calculated to be 5.8 years. The annual energy consumption for the five buildings, after the energy-efficiency measures are implemented, is projected at 900 MWh per year – 36% lower than it was before the implementation of the measures. Thus foreseen energy savings are expected to be 64% of the baseline energy consumption. Specific energy consumption of the buildings will decrease dramatically from 388 to 119 KWh/m²/y, or 105 000 Euro in municipal budget.

During the payback period of the energy-efficiency measures, the Municipality of Karlovo will pay equal monthly instalment at the rate of 8 755 EURO for energy-efficient activities and 3 163 EURO for building- repair work.

Environmental: Energy saved, improvement of air quality, CO_2 emissions avoided, other ecological benefits
(10 lines)
The CO_2 emission reduction is estimated at 650 t annually.

→ Evaluation and Outlook

Monitoring and evaluation of success and/or failure, activities undertaken after the end of the project (the impact on the development of the area)
(12 lines)
Now all 5 kindergartens in the Town of Karlovo are renovated. They are now pleasant places for the raising and education of the children. Energy monitoring program has been established.

Further information

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