

# The project entitled. "Thermomodernization and implementation of renewable energy sources in school buildings in Chodowie - green way to improve the energy efficiency"

Co-financed under the Operational Program PL04 "Saving energy and promoting renewable energy sources "by the EEA Financial Mechanism.

Date and the commencement of the project: June 2015

Date of completion of project: June 2016



# Admission:

Funds through the EEA and Norwegian funds, Iceland, Norway and Lichtenstain contribute to reducing social and economic inequality and strengthening bilateral relations with the beneficiary countries in Europe. The three countries are working closely with the EU on the basis of the Agreement on the European Economic Area (EEA Agreement). In the period 2009-2014 the value of the funds of the EEA and Norwegian funds is 1.79 billion. Norway provides around 97% of total funding. Funds are available for non-governmental organizations, research institutions and universities, the public sector and the private sector in the 12 newly acceded EU Member States and Greece, Portugal and Spain. In this framework, there is extensive cooperation with entities of the donor countries, and projects can be implemented by 2016.



**"Thermal modernization and implementation of renewable energy in buildings  
school in Chodowie - green way to improve the energy efficiency"**

# The main objective of the investment:

- Improvement energy efficiency in buildings covered by the investment in question and increase the production of energy from renewable sources;
- The increase in energy production from renewable sources;
- Reduction of CO2 emissions 890.70 [Mg / year];
- Production of energy from renewable sources 525.05 [MWh / year].



"Thermal modernization and implementation of renewable energy in buildings school in Chodowie - green way to improve the energy efficiency"

# Other equally important objectives are:

- Improvement of the standard of facilities and aesthetic values - increase the comfort of staying in public buildings
- Reducing operating expenses and repair incurred by way of routine maintenance in the main building extent reduce maintenance costs
- Improvement of the natural environment of the municipality, including primarily air quality
- Growth awareness social - ecological residents the community
- improvement image and growth attractiveness investment the



community

"Thermal modernization and implementation of renewable energy in buildings school in Chodowice - green way to improve the energy efficiency"

# Costs of:

The total cost of thermo facility amounted to 3,545,994.00 zł

Eligible costs: 3,306,832.76 zł

Grant amount: 2,645,466.21 zł

The intensity of co-financing: 80,00%



# The project was made work:

- Total replacement of windows with heat transmission through the entire window frame and the window that is below the so-called.  $U-0,9 \text{ W / m}^2\text{K}$
- Complete replacement of the door woodwork of heat transmission through the entire door or window frame and below the so-called.  $U-1,1 \text{ W / m}^2\text{K}$
- Warming the shell of the house in an amount of 6034 m<sup>2</sup>, where the walls are insulated with polystyrene graphite having a thickness of 14 cm, the roof of the gym and couplers using a polyurethane foam having a thickness of 11 cm (corresponding to a thickness of about 20 cm styropapy) on the rest of the school building is insulated roofs for with cellulose wool injected at a pressure of about 25 cm thick. Where will the warming  $U 0.15 \text{ W / m}^2\text{K}$



# The project done work:

- Listed energy-efficient lighting (LED) in the amount of 565 pieces.
- lists all installing at the inner length of 3188 m  
This pack 227 is installed. heaters and thermo valve;
- 2 installed biomass boilers, each with a capacity of 162 kW and with full automation
- Installed ventilation system with heat recovery so. recuperation, wherein heat recovery exceeds 70%, with the automation system and the heat control;
- Taken dehydration building.



"Thermal modernization and implementation of renewable energy in buildings  
school in Chodowie - green way to improve the energy efficiency"

# Beneficiaries of the project:

- Residents of the Municipality Chodów;
- Workers Elementary School, Middle School and Nursery Chodowie;
- Students Elementary School, Middle School and Nursery Chodowie;
- Authorities at the municipal level;



"Thermal modernization and implementation of renewable energy in buildings school in Chodowie - green way to improve the energy efficiency"



# Condition before investment:



**"Thermal modernization and implementation of renewable energy in buildings  
school in Chodowie - green way to improve the energy efficiency"**

# Condition before investment:



**"Thermal modernization and implementation of renewable energy in buildings  
school in Chodowie - green way to improve the energy efficiency"**

# Condition before investment:



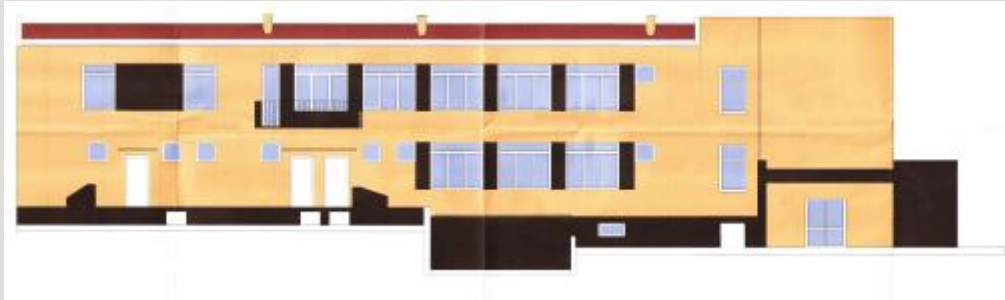
**"Thermal modernization and implementation of renewable energy in buildings  
school in Chodowie - green way to improve the energy efficiency"**

# Condition before investment:

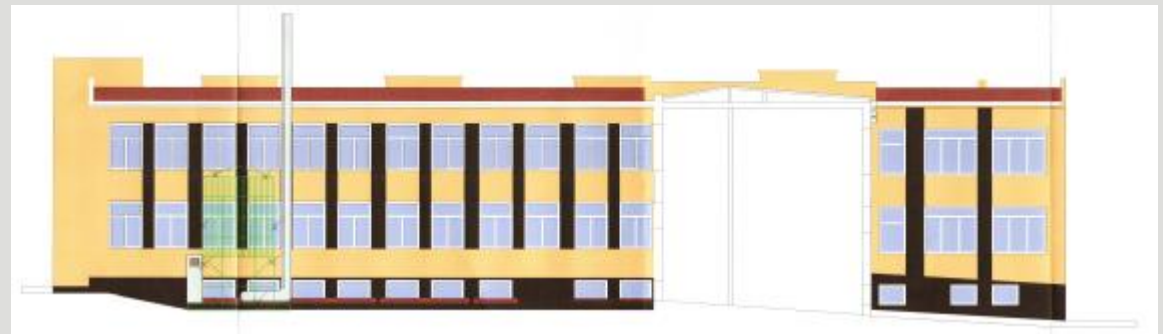


**"Thermal modernization and implementation of renewable energy in buildings  
school in Chodowie - green way to improve the energy efficiency"**

# Condition after investment:



front elevation



"Thermal modernization and implementation of renewable energy in buildings  
school in Chodowie - green way to improve the energy efficiency"

# Condition after investment:

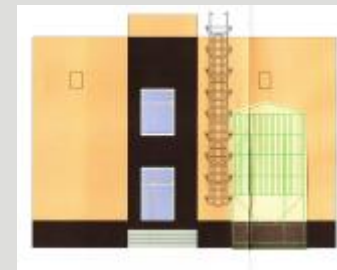
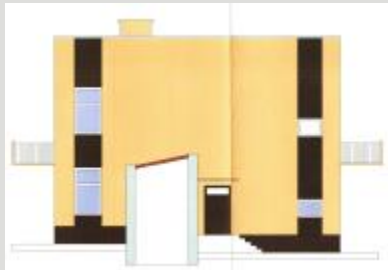


Elevation  
rear



"Thermal modernization and implementation of renewable energy in buildings  
school in Chodowie - green way to improve the energy efficiency"

# Condition after investment:



The side  
elevation



"Thermal modernization and implementation of renewable energy in buildings  
school in Chodowie - green way to improve the energy efficiency"

# Condition after investment:



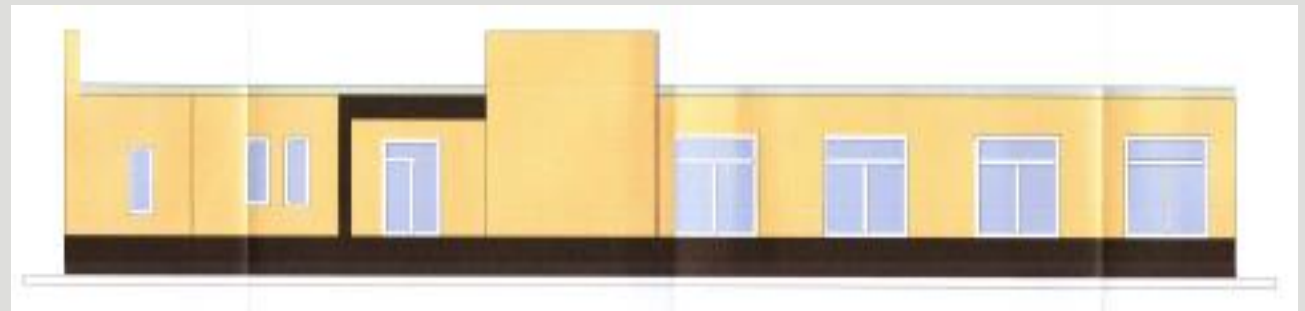
elevation of the  
connector



"Thermal modernization and implementation of renewable energy in buildings  
school in Chodowie - green way to improve the energy efficiency"



# Condition after investment:

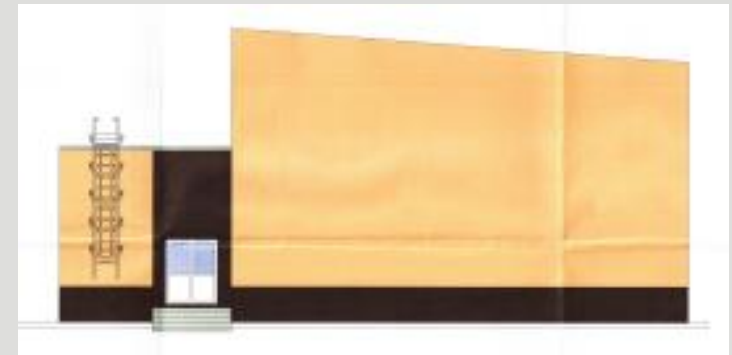
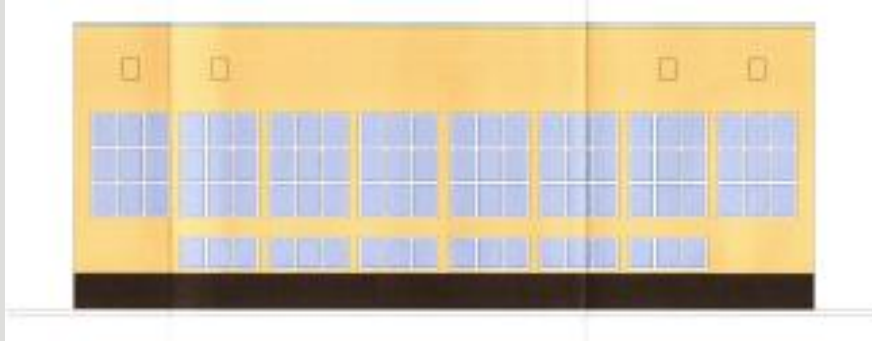


elevation  
Kindergartens



"Thermal modernization and implementation of renewable energy in buildings  
school in Chodowie - green way to improve the energy efficiency"

# Condition after investment:



Elevation  
Sports Hall



"Thermal modernization and implementation of renewable energy in buildings  
school in Chodowie - green way to improve the energy efficiency"

# Artist investment

Building company



Joseph Sławianowski

Street: Building 5/12

87 - 800 Wloclawek

Tel .: +48 691 984 306

fax .: 54 420 18 17



"Thermal modernization and implementation of renewable energy in buildings  
school in Chodowie - green way to improve the energy efficiency"

# INSPECTOR SUPERVISION CONSTRUCTION

Arkadiusz Pecyna costing, Designing,  
Building Inspections

ul. meadow 15  
62 - 650 Kłodawa  
Tel .: 603 794 433



"Thermal modernization and implementation of renewable energy in buildings  
school in Chodowie - green way to improve the energy efficiency"

# Project coordinator

Arthur Głowacz

18 paces

62 - 652 Chodów

Tel .: 63 27 37 220



**"Thermal modernization and implementation of renewable energy in buildings  
school in Chodowie - green way to improve the energy efficiency"**

- I invite all the artistic part to read up close of the works carried out.



**"Thermal modernization and implementation of renewable energy in buildings school in Chodowie - green way to improve the energy efficiency"**

THANK YOU  
BEHIND  
ATTENTION



**"Thermal modernization and implementation of renewable energy in buildings  
school in Chodowie - green way to improve the energy efficiency"**