

National Fund for Environmental Protection and Water Management
National Green Investment Scheme Operator (GIS)

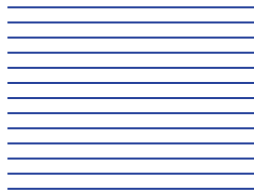
GIS system greening activities

Best practices presentation



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Ladies and Gentlemen,

Established under the framework of the UN Framework Convention on Climate Change (UNFCCC), Kyoto Protocol, permits international trade of the assigned amounts units of greenhouse gas emission. Ratifying the Protocol in 2002, Poland, made a commitment to reduce greenhouse gas emission by 6% between 2008 and 2012 as compared to 1988 as a reference year. Since the achieved reduction in emission was several times higher than the country's commitments, Poland is entitled to sell its Assigned Amount Units – the AAUs surplus.

Financial support system, for investments, in the areas of climate protection and reduction of CO₂ emission, funded from the proceeds obtained by Poland from the international transactions of CO₂ emission amounts assigned under the Kyoto Protocol sale, is called the Green Investment Scheme. The system consist of the following: the Minister of the Environment (who supervises the GIS system), the Advisory Council as an advisory body, the National Centre for Emissions Management Centre (which maintains the National Registry of Kyoto Units), and the GIS National Operator – i.e. the National Fund for Environmental Protection and Water Management, as the GIS Implementing Agency.

Since 2010, the National Operator of the GIS system, i.e. the National Fund for Environmental Protection and Water Management, has announced 14 competitions – calls for proposals, as part of seven priority programmes under the Green Investment Scheme. As a result of the calls, nearly 250 agreements on project co-financing were signed for a total amount of more than PLN 470 million. Another hundred agreements are expected to be concluded by the end of 2013.

Expected environmental effects from implementation of those projects is emission reduction estimated on the level of ca. 2,130,000 CO₂ tonnes/year and additionally, as a result of the thermal modernisation of buildings, energy savings will reach ca. 1,100,000 GJ/year. Apart from the measurable effects on the environment, the projects also support economic growth through maintaining jobs in construction and agriculture services, greater number of construction and installation materials and specialist equipment contracts.

More than a dozen projects co-financed under the Green Investment Scheme, already completed or being at the final stages of implementation are presented in this publication. Sample projects, showing efficient disbursement from the Climate Account, were selected in agreement with the Beneficiaries. Implementing the fundamental principle of the system “greening the proceeds” i.e. climate protection investing and further reduction of greenhouse gas emissions results in nearly half a billion of PLN invested in GIS projects so far.

GIS projects are besides all, satisfaction source for the Beneficiaries, including self-government units, educational and academic centres, healthcare institutions and enterprises. The “best practices” may be an incentive for future investors, to whom the Ministry of the Environment and of the National Fund addressed their offer under the Green Investment Scheme. It is worth taking advantage of it.

Barbara Koszułap
Vice-President
of the National Fund
for Environmental Protection
and Water Management



GIS – the Green Investment Scheme

The Kyoto Protocol

The Kyoto Protocol¹ to the UN Framework Convention on Climate Change specifies obligations for industrialised countries – parties to the Protocol², concerning the reduction of greenhouse gas emissions (GHG). Industrialised countries' accounted in terms of Assigned Amount Units, AAU.

In order to make it easier to fulfil these obligations, the Protocol includes mechanisms enabling industrialised countries to meet the reduction targets by financing actions that reduce emissions in other countries. The mechanisms are as follows:

- the Joint Implementation (JI) mechanism – a country with an emission reduction target may finance projects in another country, with a specific purpose resulting in GHG emissions reduction.
- Clean Development Mechanism (CDM) – under this mechanism a project aimed at GHG emissions reduction, financed by a country with a specific reduction target, is implemented in a developing country – party of the Protocol
- Emission Trading – countries that release less than the emission reduction target (and thus have AAUs surplus) may sell their surplus units to countries that release more than their target.

The national Green Investment Scheme

GIS – Green Investment Scheme is a consequence of the emission trading mechanism.

The idea and purpose of GIS is to create and enhance the pro-environmental effect attributed to the sale of AAUs. The national green investment scheme is linked to “marking the proceeds obtained from the sale of surplus Assigned Amount Units in order to ensure that they are allocated to implementing strictly defined goals related to environmental protection in the country of the AAUs seller”.

Greening the revenues

The proceeds obtained from the sale of AAUs are spend in accordance with the conditions agreed upon with the purchasing country and specified in the sales agreement; these concern the time limits

¹ The Kyoto Protocol, signed in 1997, entered into force in 2005.

² Parties to the Protocol also include developing countries, for which no obligations have been specified concerning the reduction of greenhouse gas emissions.

for using the proceeds, allocating them to specific types of undertakings, establishing maximum intensity of co-financing, information about the environmental effects obtained. Thus, the national Green Investment Scheme guarantees on the one hand that through the purchase, a country with an insufficient AAUs will be able to increase their GHG emission and that, at the same time, the proceeds transferred will be allocated by the seller to initiatives related to broadly conceived climate and environment protection. Therefore, the fundamental principle of the functioning of GIS – the “greening of revenues” – consists in that the proceeds from the sale of AAUs may only be invested in further reductions of greenhouse gas emissions or in activities aimed at adapting to climate change.

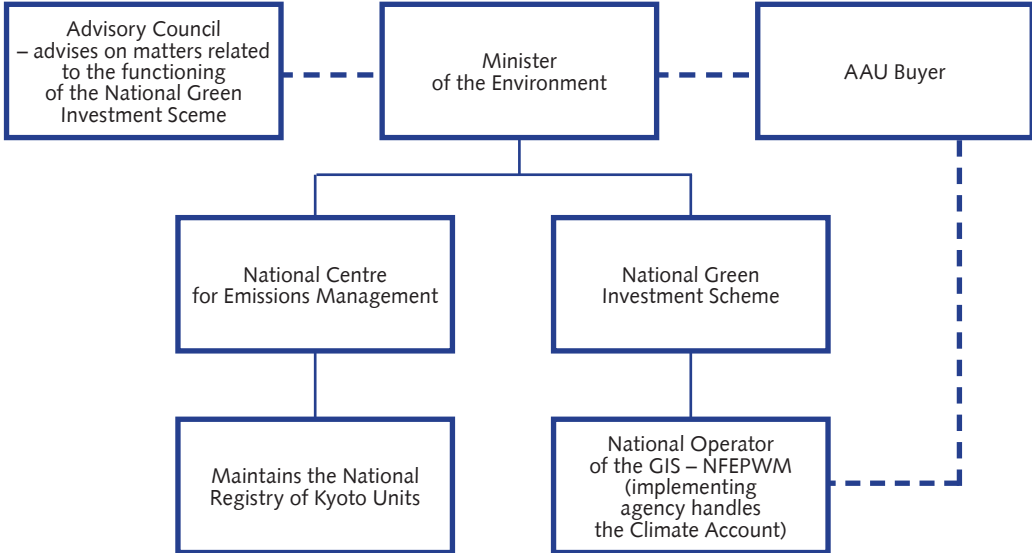


Fig. 1. A diagram of the functioning of the Green Investment Scheme

NFEPWM – GIS National Operator

National GIS Operator manages the national Green Investment Scheme. The tasks of the National Operator in Poland have been entrusted to the National Fund for Environmental Protection and Water Management (hereinafter referred to as the National Fund or the NFEPWM). The minister responsible for the environment supervises how the National Operator discharges its duties.

The most important tasks of the National Operator include: organising calls for proposals for co-financing of projects, evaluating of those proposals, as well as supervision and evaluation of environmental effects of projects or programmes that were granted financial support.

The Climate Account

In order to guarantee that the financial resources from the sale of AAUs remain separate, they are collected on the Climate Account, which is a separate bank account of the National Fund. The proceeds from the Climate Account are spend to co-finance tasks related to supporting undertakings implemented within the programmes and projects covered by the national Green Investment Scheme.

Priority programmes

Since 2010, the National Fund for Environmental Protection and Water Management has been implementing seven priority programmes under the GIS system, within which project co-financing is offered. The programmes cover:

1. Energy management in public utility buildings

The Green Investment Scheme.

Part (1) – Energy management in public utility buildings.

Programme objective:

- Reducing or avoiding carbon dioxide emissions by co-financing projects that improve energy efficiency in public utility buildings.

Budget:

- subsidies – PLN 580 million – from the proceeds from the sale of AAUs (subsidies from the Green Investment Scheme, GIS) or other sources of the National Fund;
- loans – PLN 770 million – from the National Fund resources.

2. Agricultural biogas plants

The Green Investment Scheme.

Part (2) – Agricultural biogas plants.

Programme objective:

- Reducing or avoiding carbon dioxide emissions from the combustion of fossil fuels by co-financing the construction of agricultural biogas plants using renewable resources.

Budget:

- subsidies – PLN 200 million – from the proceeds from the sale of AAUs or other sources of the National Fund;
- investment loans – PLN 300 million – from the National Fund resources.

3. Biomass heat and power plants

The Green Investment Scheme.

Part (3) – Biomass heat and power plants

Programme objective:

- Reducing or avoiding carbon dioxide emissions from the combustion of fossil fuels by co-financing the construction of biomass combined heat and power stations.

Budget:

- subsidies – PLN 50 million – from the proceeds from the sale of AAUs or other sources of the National Fund;
- investment loans – PLN 75 million – from the National Fund resources.

4. Construction and reconstruction of electricity networks for connecting renewable wind energy sources (RES)

The Green Investment Scheme.

Part (4) – Construction and reconstruction of electricity networks for connecting renewable wind energy sources (RES).

Programme objective

- Enabling the connection and introduction to the National Electricity and Energy Network (NEEN) of energy produced by new renewable wind energy sources (RES).

Budget:

- subsidies – PLN 250 million from the proceeds from the sale of AAUs or other sources of National Fund.

5. Energy management in buildings of selected public sector entities

The Green Investment Scheme.

Part (5) – Energy management in buildings of selected public sector entities

Programme objective:

- Reducing or avoiding carbon dioxide emissions by funding projects that improve energy efficiency in buildings of selected public sector entities.

Budget:

- Subsidies – PLN 545 million from the proceeds from the sale of AAUs or other sources of National Fund.

6. SOWA – Energy-efficient street lighting

The Green Investment Scheme.

Part (6) SOWA – Energy-efficient street lighting.

Programme objective:

- supporting the implementation of undertakings that improve the energy-efficiency of street lighting systems.

Budget:

- Subsidies – PLN 160 million from the proceeds from the sale of AAUs or other sources of National Fund.
- Loans – PLN 196 million from other sources of the National Fund.

7. GAZELA – Low-emission municipal transport

The Green Investment Scheme.

Part (7) GAZELA – Low-emission municipal transport

Programme objective:

- Reducing or avoiding emission of CO₂ by funding undertakings that consist in reducing energy and fuel consumption by municipal transport.

Budget:

- Subsidies – PLN 80 million from the proceeds from the sale of AAUs or other sources of National Fund.

GIS programme effects

Since 2010, the National Operator of the GIS system, i.e. the National Fund for Environmental Protection and Water Management, has announced 14 competitions – calls for proposals under seven priority programmes. All announcements and results of the calls for proposals along with the procedure are published at www.nfosigw.gov.pl. As a result of the competitions, 249 agreements on project co-financing were signed (as of the end of February 2013) for the following amounts:

- PLN 413 million (EUR 99.4 million³) – projects related to energy management in public utility buildings and in buildings of selected public sector entities;
- PLN 49.3 million (EUR 11.9 million) – projects related to agricultural biogas plants;
- PLN 11.5 million (EUR 2.8 million) – projects related to the construction of biomass heat and power plants.

³ Based on the exchange rate of the National Bank of Poland of 1 March 2013: www.nbp.pl

The completion of most projects, planned for the end of 2013, concerns the thermal modernisation of more than 200 kindergartens, primary schools, higher education institutions, hospitals and other public utility buildings. Since the beginning of 2013, the National Fund has announced two competitions under SOWA and GAZELA priority programmes, and further calls for proposals are planned. The implementation of these projects is envisaged for the 2013-2016 period. By the end of 2013, another 100 agreements are planned to be signed concerning co-financing of projects implemented under the GIS system.

Below we present more than a dozen selected GIS projects that have been completed or are at the final stages of implementation.

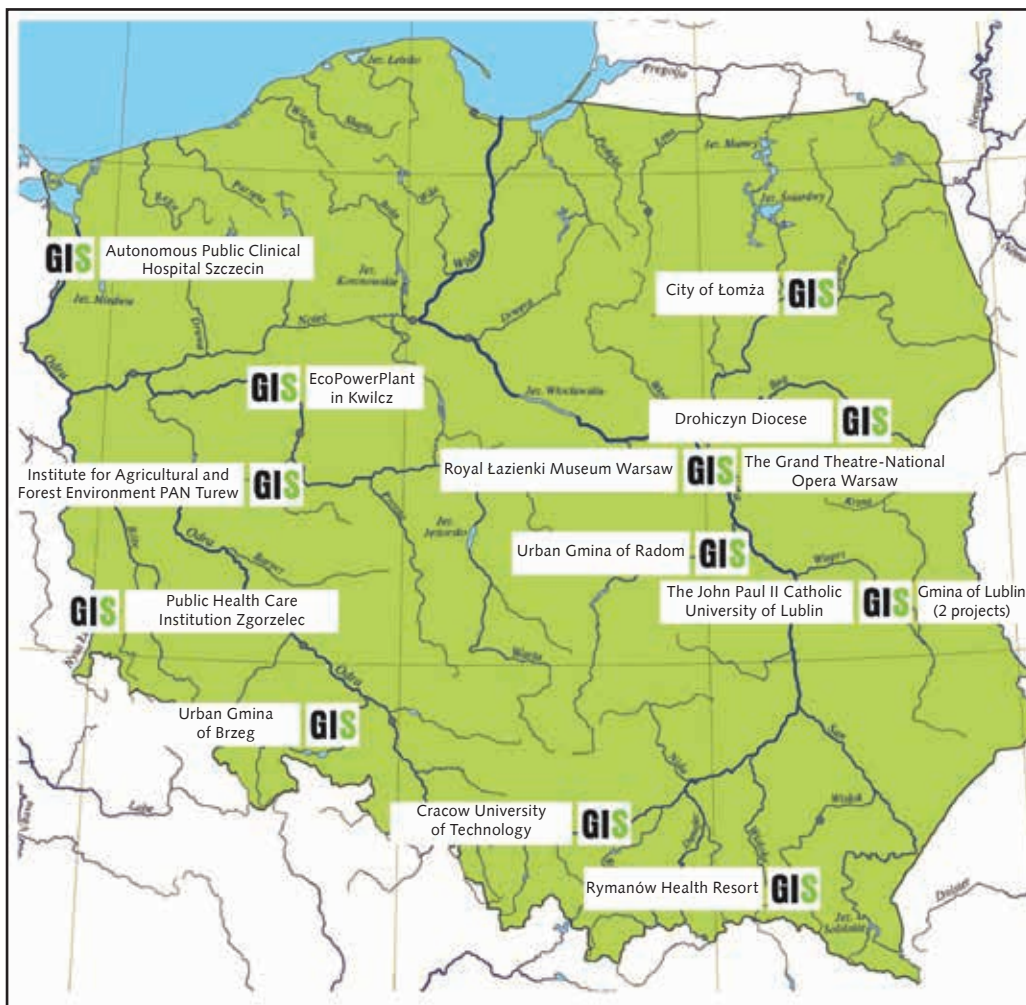


Fig. 2. Location of projects presented in the publication

GIS projects presented in the publication

No.	Project name	Beneficiary	p.
1	Thermal modernisation of the building of the National Opera and the National Theatre	Teatr Wielki – Opera Narodowa [The Grand Theatre – National Opera]	10
2	Thermal modernisation with energy management in selected buildings in the Royal Łazienki Museum – the Cadet Building, Old Guardhouse, the Forge	Muzeum Łazienki Królewskie Zespół Pałacowo-Ogrodowy [Royal Łazienki Museum, palace and garden complex]	11
3	Thermal modernisation of the Lublin Centre of Vocational Education and the Complex of Electronic Schools in Lublin	Gmina Lublin [Gmina of Lublin]	12
4	Thermal modernisation of public utility educational facilities in Lublin – Stage 2	Gmina Lublin [Gmina of Lublin]	13
5	Thermal modernisation of educational institutions in Łomża	Miasto Łomża [City of Łomża]	14
6	Modernisation of public utility buildings within the territory of the Urban Gmina of Brzeg	Gmina Miasta Brzeg [Urban Gmina of Brzeg]	15
7	Thermal modernisation of public utility buildings for Teatr Powszechny, Radom Specialist Hospital and PSP No. 3, PSP No. 24, LO No. VII and PG No. 3 in Radom	Gmina Miasta Radomia [Urban Gmina of Radom]	16
8	Thermal modernisation with RES of selected public utility structures of the Diocese of Drohiczyń	Diecezja Drohiczyńska [Drohiczyń Diocese]	17
9	Thermal modernisation of the complex of research and lecture buildings of the Catholic University of Lublin at ul. Droga Męczenników Majdanka 70 in Lublin	Katolicki Uniwersytet Lubelski Jana Pawła II [The John Paul II Catholic University of Lublin]	18
10	<ul style="list-style-type: none"> Thermal modernisation in the buildings of the Faculty of Environmental Engineering at the Cracow University of Technology Thermal modernisation in the buildings of the Faculty of Electrical and Computer Engineering at the Tadeusz Kościuszko Cracow University of Technology Thermal modernisation in the building of the Faculty of Mechanical Engineering at the Cracow University of Technology 	Politechnika Krakowska im. Tadeusza Kościuszki [Tadeusz Kościuszko Cracow University of Technology]	19
11	Thermal modernisation of the Institute of Agricultural and Forest Environment of the PAS, located in the Chłapowski Palace in Turew	Instytut Środowiska Rolniczego i Leśnego PAN [Institute for Agricultural and Forest Environment of Polish Academy of Sciences]	21
12	Thermal modernisation of the “Sanatorium Staś i Zimowit” together with boiler technology in the Rymanów Health Resort	Uzdrowisko Rymanów S.A. (Rymanów Health Resort)	23
13	Thermal modernisation of the SPSK1 PUM buildings in Szczecin	Samodzielny Publiczny Szpital Kliniczny nr 1 im. prof. T. Sokołowskiego PUM w Szczecinie [Autonomous Public Clinical Hospital No. 1 of the Pomeranian Medical Academy in Szczecin]	24
14	Comprehensive thermal modernisation of the Centre for Patients with Mental and Neural Disorders in Sieniawka, Multidisciplinary Hospital IPHCl in Zgorzelec, stage 2	Wielospecjalistyczny Szpital – Samodzielny Publiczny Zespół Opieki Zdrowotnej w Zgorzelcu [Multidisciplinary Hospital Independent Public Health Care Institution in Zgorzelec]	26
15	Extension of the biomass heating plant by adding a thermal oil circuit at the EcoPowerPlant company with an ORC unit	EcoPowerPlant Sp. z o.o. Zakład Produkcyjny Orzeszkowo gm. Kwilcz [Orzeszkowo Production Plant in the Gmina of Kwilcz]	27



Project: Thermal modernisation of the building of the National Opera and the National Theatre

Beneficiary: The Grand Theatre – National Opera

Total project cost: PLN 8,666,598

Co-financing: PLN 8,233,269

Thermal modernisation of the National Opera and the Grand Theatre in Warsaw

The project “Thermal modernisation of the building of the National Opera and the National Theatre”, submitted and implemented by the Grand Theatre-National Opera in Warsaw, is covered by co-financing from the proceeds accumulated in the Climate Account under the first competition within the priority programme “Green Investment Scheme Part (5) Energy management in buildings of selected public sector entities”, addressed at public cultural institutions.

The project concerns thermal modernisation of the building of the National Theatre and the National Opera. The following works are planned to be carried out:

- flat roof insulation,
- replacement of windows and external entrance doors,
- replacement of historical exterior entrance doors,
- replacement of thermostatic valves,
- replacement of radiators,
- installation of riser valves,
- installation of automatic vents,
- hydraulic control of central heating installations,
- modernisation of mechanical ventilation.

Effects gained

Reduction of CO₂ emissions associated with energy savings as a result of the project by 1,372 Mg CO₂/year.

FOR MORE INFORMATION CONTACT:

- Teatr Wielki w Warszawie [The Grand Theatre in Warsaw]
- Plac Teatralny 1, 00-950 Warszawa
- Sabina Madeja
- Tel. (+48 22) 692 05 29
- E-mail: smadeja@teatrwielenki.pl





Project: Thermal modernisation with energy management in selected buildings in the Royal Łazienki Museum – the Cadet Building, Old Guardhouse, the Forge

Beneficiary: Muzeum Łazienki Królewskie Zespół Pałacowo-Ogrodowy [Royal Łazienki Museum, palace and garden complex]

Total project cost: PLN 2,207,600

Co-financing: PLN 1,817,600

Thermal modernisation of historical buildings in Royal Łazienki in Warsaw

The project “Thermal modernisation with energy management in selected buildings in the Royal Łazienki Museum – the Cadet Building, Old Guardhouse, the Forge”, submitted and implemented by the Muzeum Łazienki Królewskie Zespół Pałacowo-Ogrodowy in Warsaw, is covered by co-financing from the proceeds accumulated in the Climate Account under the first competition within the priority programme “Green Investment Scheme Part (5) Energy management in buildings of selected public sector entities”, addressed at public cultural institutions.

The project concerns the implementation of thermal modernisation in 3 buildings located in the Royal Łazienki:

- the Old Guardhouse Building,
- the Forge,
- the Cadet building.

The following works are planned: modernisation of the central heating system, replacement of doors and windows, roof insulation, modernisation of the hot utility water system, replacement of lighting.

Effects gained:

Reduction of CO₂ emissions associated with energy savings as a result of the project by 230 Mg CO₂/year.

FOR MORE INFORMATION CONTACT:

- Muzeum Łazienki Królewskie w Warszawie [Royal Łazienki Museum in Warsaw]
- ul. Agrykoli 1, 00-460 Warszawa
- Dział Promocji i Marketingu [Promotion and Marketing Department]
- Marek Zieliński
- tel. (+48 22) 50 60 159
- E-mail: marek.zielinski@lazienki-krolewskie.pl





Project: Thermal modernisation of the Lublin Centre of Vocational Education and the Complex of Electronic Schools in Lublin

Beneficiary: Gmina of Lublin
Total project cost: PLN 11,463,155
Co-financing: PLN 9,683,384

Thermal modernisation of vocational schools in Lublin

The project "Thermal modernisation of the Lublin Centre of Vocational Education and the Complex of Electronic Schools in Lublin", submitted and implemented by the Gmina of Lublin, falls under the priority programme "Green Investment Scheme Part (1) Energy management in public utility buildings".

Thermal modernisation applies to four buildings of vocational education centre in Lublin, including:

- the main building of the Complex of Electronic Schools with gym and workshops;
- the building of the Dormitory of the Complex of Electronic Schools;
- the building of the running track and sports hall of the Complex of Electronic Schools;
- the main building of the Lublin Centre of Vocational Education with gym and workshops.

The project will result in an improved technical condition of the facilities in terms of their thermal management, lower operating costs of the buildings, reduction of emission of environmentally harmful substances due to the reduced demand for heat and the improvement of sanitary and hygienic conditions due to the following improvements: insulation of surfaces, including the insulation of foundations of external walls of the basement in the ground and above the ground, insulation of external walls, the floor above the ground, ceilings and roofs, replacement of windows and doors, replacement of internal systems (central heating, hot utility water), modernisation of the heating substation, modernisation of the ventilation system, installation of solar collectors, modernisation of lighting.



Effects gained

Avoided CO₂ emissions associated with energy savings as a result of the project – 787 Mg CO₂/year.

FOR MORE INFORMATION CONTACT:

- Bernadeta Krzysztofik
- Dyrektor Wydziału Funduszy Europejskich Urzędu Miasta Lublin
- [Head of the European Funds Department of the City Hall in Lublin]
- 20-065 Lublin, ul. Stanisława Leszczyńskiego 14
- Tel. (+48 81) 466 28 00
- E-mail: fundusze@lublin.eu





Project: Thermal modernisation of public utility educational facilities in Lublin – Stage 2

Beneficiary: Gmina of Lublin

Total project cost: PLN 11,380,763

Co-financing: PLN 3,814,820

Second phase of thermal modernisation of school buildings in Lublin

The second phase of the project “Thermal modernisation of public utility educational facilities in Lublin” covers eight educational buildings in seven schools in Lublin. The facilities subject to thermal modernisation belong to the Motor Vehicle Engineering School Complex, a lower secondary school and five primary schools.

The final completion date for the works in all schools is set for April 2013. The scope of works in most facilities covers e.g. the replacement of windows and external doors, additional insulation of roofs, flat roofs and external walls with mineral wool, modernisation and regulation of heating substations (including a weather compensator) and the installation of central heating with the replacement of old radiators and piping.

The following material effects will be achieved as a result of project implementation:

- 8 buildings will be thermally modernised: insulation of external sections (roofs, flat roofs, walls), replacement of windows, replacement of doors, replacement of gates, modernisation of the internal central heating system, modernisation of the heating substation, regulation of the gas boiler house, modernisation of the heating connection.

Planned environmental effect

- Avoided CO₂ emissions associated with energy savings as a result of the project – 519 Mg CO₂/year.

FOR MORE INFORMATION CONTACT:

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Project: Thermal modernisation of educational institutions in Łomża

Beneficiary: City of Łomża

Total project cost: PLN 10,505,000

Co-financing: PLN 5,258,000

Thermal modernisation of schools in Łomża

The project "Thermal modernisation of educational institutions in Łomża", submitted and implemented by the City of Łomża, falls under the priority programme "Green Investment Scheme Part (1) Energy management in public utility buildings". The Applicant agreed to the proposal to change the source of project financing into the proceeds from the Climate Account, i.e. a separate bank account of the NFEPWM to which proceeds from the sales of AAUs are transferred, established pursuant to Article 23 of the Act on the Green Investment Scheme.

Thermal modernisation covers four school buildings in Łomża. As a result of the project, the technical condition of the facilities will improve as regards their thermal management, their operation costs will decrease and the amounts of harmful substances emitted to the environment will be diminished due to a reduced demand for heat, and sanitary and hygiene conditions will improve due to the following improvements: insulation of external sections (walls, ceilings, roofs), replacement of internal installations, replacement of windows, replacement of doors, construction or modernisation of the ventilation system.

Planned environmental effects:

Avoided CO₂ emissions associated with energy savings as a result of the project – 687 Mg CO₂/year.

FOR MORE INFORMATION CONTACT:

- Urząd Miasta Łomża [City Hall of Łomża]
- Plac Stary Rynek 14, 18-400 Łomża
- Tel. (+48 86) 215 67 00
- E-mail: ratusz@um.lomza.pl





Project: Thermal modernisation of public utility buildings within the territory of the Urban Gmina of Brzeg

Beneficiary: Urban Gmina of Brzeg
Total project cost: PLN 7,439,080
Co-financing: PLN 6,131,182

Twelve facilities after thermal modernisation in Brzeg

The purpose of the project "Thermal modernisation of public utility buildings within the territory of the Urban Gmina of Brzeg" was to improve the energy efficiency of public utility buildings in Brzeg. The implemented project consisted in thermal modernisation works in 12 facilities that belong to the gmina: seven kindergartens, two lower secondary schools, two school complexes and the City Hall. The largest in their material and financial scope were the works at the School Complex No. 1 with Sports Divisions, State Lower Secondary School No. 3, and the City Hall building.

The project was completed in November 2012. Apart from the improved outlook of the buildings covered by the project, beneficial changes will also be observed in the environment.

Planned environmental effects:

Avoided CO₂ emissions associated with energy savings as a result of the project – 836 Mg CO₂/year.

FOR MORE INFORMATION CONTACT:

- Urząd Miasta Brzeg [City Hall of Brzeg]
- ul. Robotnicza 12, 49-300 Brzeg
- Biuro Budownictwa i Inwestycji [Office for Construction and Investment]
- Piotr Serwaczak
- Tel. (+48 77) 404 58 15
- E-mail: um@brzeg.pl





Project: Thermal modernisation of public utility buildings for Teatr Powszechny, Radom Specialist Hospital and PSP No. 3, PSP No. 24, LO No. VII and PG No. 3 in Radom

Beneficiary: Urban Gmina of Radom (the project is implemented as a group project, with the Urban Gmina of Radom as the Leader, and the Teatr Powszechny in Radom and Radom Specialist Hospital as Partners)

Total project cost: PLN 25,540,279

Co-financing: PLN 7,123,431.

Thermal modernisation of public utility buildings in Radom

The project covers the thermal modernisation of public utility buildings, including three educational establishments of the Urban Gmina of Radom, Teatr Powszechny in Radom, and the Radom Specialist Hospital.

The scope of thermal modernisation works implemented as part of the undertaking covers in particular: thermal modernisation of educational buildings (insulation of external walls, insulation of flat roofs, replacement of windows and external doors, rinsing of the central heating installation) and thermal modernisation of the building of Teatr Powszechny im. Jana Kochanowskiego in Radom (insulation of the flat roof and external walls of roof-top extensions, insulation of external walls and walls beneath the atrium area, replacement of glass walls and windows in the glass walls, thermal modernisation of bay windows in the façade, installation of a system of solar collectors, replacement of the central heating system, modernisation of the ventilation system, replacement of previous light sources with energy-efficient ones, replacement of windows and doors, reconstruction of the boiler house with 6 heating substations and the heating network). At the Radom Specialist Hospital, the scope of works covers e.g. the modernisation of the steam and water boiler house, modernisation of the central heating and external process steam network, modernisation of heating substations with the purchase and installation of solar collectors.

The implemented investment will have a positive impact on the environment. The solutions applied will contribute to the reduction of pollution owing to the use of modern energy-efficient systems, reduced use of fossil fuels, reduced emission of pollutants into the air, and the use of renewable energy sources.

Planned environmental effects:

Avoided CO₂ emissions associated with energy savings as a result of the project – 2,610 Mg CO₂/year.

FOR MORE INFORMATION CONTACT:

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Project: Thermal modernisation with RES of selected public utility structures of the Diocese of Drohiczyń

Beneficiary: the Diocese of Drohiczyń

Total project cost: PLN 9,073,735

Co-financing: PLN 2,602,120

A unique GIS project in the historical sacred Drohiczyń

Some of the structures under the supervision of the Historic Preservation Officer required the use of appropriate construction materials which, apart from the most faithful reconstruction of architectural details, would ensure that the micro-climate of the interiors of the historical buildings would not deteriorate. The structures subject to thermal modernisation works are available to the public throughout the year, which also entails high energy consumption throughout the year. Typical examples of such structures, apart from churches, are two historical complexes of buildings in Drohiczyń: a complex of post-Jesuit buildings and a post-Franciscan complex. In both cases, all traditional light-bulb and fluorescent-lamp lighting was replaced with modern and extremely efficient led lighting. In the second of the above-mentioned complexes, the heat source was replaced with heat pumps, which – combined with the insulation of walls with wool and additional insulation of foundations – created unusual environmental effects, augmented by the replacement of doors and windows, as well as the thermal insulation of the attic, applied also to other structures.

Thermal modernisation works, apart from the measurable environmental effects, certainly had an educational effect as well. The communities of residents of the towns where the thermal modernisation works were carried out were active and keen in following the subsequent stages of the investment. Direct talks with persons involved in preparatory and cleaning works during thermal modernisation revealed more than just interest in the tasks performed or materials used to ensure the intended thermal effect, but also in their environmental aspect and the purposefulness of the NFEPWM supporting such investments. It is beyond any doubt that the investment described above has contributed not only to the improved thermal condition of the structures modernised, but also, as already mentioned, gave a positive impulse for the rational and economic energy policy of specific communities and individuals.

Planned environmental effect:

Avoided CO₂ emissions associated with energy savings as a result of the project – 3,064 Mg CO₂/year.

FOR MORE INFORMATION CONTACT:

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- e-mail: kuria@drohiczynska.pl





Project: Thermal modernisation of the complex of research and lecture buildings of the Catholic University of Lublin at ul. Droga Męczenników Majdanka 70 in Lublin

Beneficiary: the John Paul II Catholic University of Lublin

Total project cost: PLN 3,305,500

Co-financing: PLN 2,974,954

Thermal modernisation of the complex of research and lecture buildings of the Catholic University of Lublin

The planned scope of works in the three buildings covered by the project includes: thermal modernisation of 2 buildings within the scope specified in the audits of the buildings, and the construction of a heat exchanger room in one of the buildings.

The detailed scope of thermal modernisation works includes e.g.: the insulation of external walls, modernisation of hot utility water system (replacement of system, installation of thermostatic valves on vertical circulation pipelines), modernisation of gravitational ventilation (introduction of hybrid ventilation, i.e. roof ventilators, humidity-controlled window air vents, humidity-controlled exhausts), replacement of existing doors with aluminium covered doors, insulation of the flat roof with mineral wool boards, replacement of central heating system with radiator thermostatic valves, replacement of light fittings with energy-efficient lighting, and construction of a heat exchanger room.



Planned environmental effect:

Avoided CO₂ emissions associated with energy savings as a result of the project – 390 Mg CO₂/year.

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Project: Thermal modernisation in the buildings of the Faculty of Environmental Engineering at the Cracow University of Technology

Beneficiary: Tadeusz Kościuszko Cracow University of Technology

Total project cost: PLN 11,228,401

Co-financing: PLN 7,171,243

Project: Thermal modernisation in the buildings of the Faculty of Electrical and Computer Engineering at the Tadeusz Kościuszko Cracow University of Technology

Beneficiary: Tadeusz Kościuszko Cracow University of Technology

Total project cost: PLN 6,802,386

Co-financing: PLN 3,390,569

Project: Thermal modernisation in the building of the Faculty of Mechanical Engineering at the Cracow University of Technology

Beneficiary: Tadeusz Kościuszko Cracow University of Technology

Total project cost: PLN 12,219,750

Co-financing: PLN 10,572,797

Thermal modernisation in three buildings of the Cracow University of Technology

Renovation and thermal modernisation works of the twin buildings of the Faculty of Environmental Engineering and the Faculty of Electrical and Computer Engineering are being carried out at the campus of the Cracow University of Technology. The repairs in Czyżyny cover the buildings of the Faculty of Mechanical Engineering.

Thermal modernisation of the building of the Faculty of Environmental Engineering

As part of the modernisation works, the project scope covered, above all, the building parts that were added in the post-war period, i.e. a glass curtain projection and a superstructure tier in the field of replacement of glazing and additional heat insulation of walls, yet the scope of works also included a comprehensive renovation of historic brick facades. The building parts additionally built in late 1960s have never been completed. Such a condition resulted in huge heat loss both by the walls lacking heat insulation and plaster, and in outdated glazing systems. The co-financed project used heat insulation made of mineral wool and a finish made of high-grade silicone plaster, which prevents the walls from being covered with fungi, facilitates the diffusion of steam and has self-cleaning properties, which is of major importance for the high annual air pollution in Cracow. A new post and beam facade system with increased thermal insulation was mounted in the building's middle projection using a highly selective, low-emission insulated glass set, which assure very good thermal insulation of the partition and effectively protects the useful premises against overheating. It should be pointed out that when designing the regeneration and thermal insulation solutions, focus was placed on the preservation of the exceptional architectural character of the additionally build part. The plan also covered the construction of a central hot tap water facility, conversion of the ventilation facility, air conditioning facility, central heating facility and replacement of lighting frames with energy efficient ones.

Thermal modernisation of the building of the Faculty of Electrical and Computer Engineering

Just like in the case of the building of the Faculty of Environmental Engineering, the project covered the glass middle projection and comprehensive renovation of historic brick facades. This co-financed project also involved the application of heat insulation made of mineral wool and high-grade finish of the silicone plaster, as well as the installation of a post and beam facade system with increased thermal insulation using, just like in the building of the Faculty of Electrical and Computer Engineering, a insulated glass set, which assure very good thermal insulation of the partition and effectively protects the

useful premises against overheating. The plan also covered the construction of a central hot tap water system, ventilation facility, air conditioning facility, central heating facility and replacement of lighting frames with energy efficient ones.

Thermal modernisation in the building of the Faculty of Mechanical Engineering

The entire glazing has been replaced using a modern post and beam system. It assured a substantial improvement in the heat insulation of external partitions and adjustment of the facade panelling to the fire-fighting requirements. The project also covered traditional heat insulation of walls, the construction of a central hot tap water facility, conversion of the central heating facility and replacement of lighting frames with energy efficient ones.

Planned environmental effect:

The amount of avoided CO₂ emissions associated with energy savings as a result of project implementation – 1,674 Mg/year

FOR MORE INFORMATION CONTACT:

- Mgr inż. arch. Zbigniew Jasak
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Project: Thermal modernisation of the Institute of Agricultural and Forest Environment of the PAS, located in the Chłapowski Palace in Turew

Beneficiary: Institute for Agricultural and Forest Environment of Polish Academy of Sciences
Total project cost: PLN 1,819,700
Co-financing: PLN 1,600,330

Modern energy source in the historic Chłapowski Palace in Turew

The investment project entitled “Thermal modernisation of the Institute of Agricultural and Forest Environment of the PAS, located in the Chłapowski Palace in Turew” consisted in construction of a thermal insulation of the attic with the use of mineral wool, replacement of the central heating installation, renovation and partial replacement of the door woodwork and replacement of the energy source for the building’s coal heating with a renewable energy source in the form of heat pumps.

The use of heat pumps as the heating system resulted in total elimination of pollution emission and in obtaining heat energy from a vertical ground heat exchanger.

Because of its complex nature, the investment was divided into three specific stages:

- **Stage 1** covered the installation of a the thermal insulation of the building’s attic in order to reduce the heat loss thanks to mineral wool placed on the palace’s roof,
- **Stage 2**, due to the historic nature of the building, covered the renovation and partial replacement of the door woodwork,
- **Stage 3** covered the installation of a new central heating and hot tap water facility along with replacement of heat source, i.e. of a coal-fired boiler room with a RES – compressor-based heat pumps supplied by a ground heat exchanger.



The building's historic nature resulted in certain design restrictions, and an additional auxiliary heat source had to be designed – a wood-fired boiler.

Because of the technology used in the heat pumps (RES), the building currently does not emit any pollutants. Therefore, the investment's environmental effect was fully achieved, both by means of elimination of the coal-fired boiler room and the reduction of lost heat discharged into the atmosphere through an increase in the attic insulation coefficient and replacement of the palace's entrance doors. All the operations carried out under the investment resulted in decreased demand for energy in the building, which in consequence will translate into reduced maintenance costs of the building and elimination of a position of a boiler room stoker.

The investment in Turew was also of major importance for the condition of the deciduous forest stand in the 20-hectare historic park surrounding the palace.

Because of the agricultural nature of the region, the functioning of the station and existence of the building is of major importance for the local community, both for the individual farmers and for the large-area farms that grow crops on an industrial scale.

Planned environmental effect:

The amount of avoided CO₂ emissions associated with energy savings as a result of project implementation – 278 Mg/year

FOR MORE INFORMATION CONTACT:

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Project: Thermal modernisation of the "Sanatorium Staś i Zimowit" together with boiler technology in the Rymanów Health Resort

Beneficiary: Uzdrowisko Rymanów S.A. (Rymanów Health Resort)

Total project cost: PLN 16,371,921

Co-financing: PLN 15,355,216

Thermal modernisation of the sanatoria in Rymanów Zdrój

The Spa Hospital "ZIMOWIT" is a multi-function sanatorium consisting of several buildings, located within a forested land at the hillside of the Zamczysko mountain. It can simultaneously accommodate 360 patients. It is adapted for disabled people on wheelchairs. In the facility, there is a modern Natural Therapy Centre, a swimming pool for gymnastics and mineral baths, sauna, gymnasium, cafe, sanatorium school and two internet cafes. There is also a comprehensive food supply base. In the vicinity of the "ZIMOWIT" Spa Hospital, there is "Staś" Sanatorium. It is a ground-floor building, which acts as a hotel.

The construction works in the complex of buildings of the "ZIMOWIT" Spa Hospital, in the "Staś" Sanatorium and in the boiler room commenced in September 2012. Krośnieńskie Przedsiębiorstwo Budowlane w Krośnie S.A. is the lead contractor for all the works.

The investment works take place on the round-the-clock basis. Such method represents a considerable obstacle for the lead contractor since the works need to be carried out in such a way so that the patients staying at the centre experience it to the least possible degree.

The works consist of several stages, which will be conducted uniformly in each of the buildings. They consist in heat insulation of buildings, replacement of the installation of central heating and hot tap water installation, setting up of solar collectors and a solar installation, replacement of boilers and modernisation of exchangers.

Currently, the heat insulation of several buildings still needs to be done, as well as finishing the roofs and installation of solar facilities. Some of them were installed by the contractor, but the winter season interrupted the work at this stage of investment. The size of the solar installation, which will be the second largest facility in Poland (200 solar panels in one complex of buildings), forced the contractor to wait for better weather. The project implementation degree as of today was specified at 85%. The deadline for the entire investment is not at risk, and it was set for 30 June 2013.

Planned environmental effect:

The amount of avoided CO₂ emissions associated with energy savings as a result of project implementation – 1,550 Mg/year

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Project: Thermal modernisation of the SPSK1 PUM buildings in Szczecin

Beneficiary: Autonomous Public Clinical Hospital No. 1
of the Pomeranian Medical Academy in Szczecin

Total project cost: PLN 13,755,101

Co-financing: PLN 3,434,953

New look of the hospital in Szczecin

The material scope of the project covered nine wings of the building of the main hospital, along with two detached buildings. The works included: replacement of the window woodwork and external door woodwork, modernisation of the central heating installation, modernisation of the hot tap water installation, thermal insulation of external walls, thermal insulation of ceilings and roofs and repairs of terraces, stairs and entrances.

Technical condition of the buildings before thermal modernisation

The age of the buildings and the now outdated technology that was available at the time they were built resulted in the generation of increasingly high heat loss in the hospital buildings and hence in the increasing cost of heat supply. As the buildings had been used for many years, it resulted in substantial tear and wear and lack of insulation of the window woodwork, which in many cases even prevented the windows from opening. Lacking additional heat insulation in the hospital buildings had a considerable impact on the quality and comfort of stay for the patients, the working conditions and the generally poor condition of the technical infrastructure. The old central heating installations consisting of cast-iron radiators and steel pipelines with large diameters resulted in system's high inertia and its low heating capacity. The reduction in the heating system capacity was caused to a great degree by the absence of control systems in the installation.

The course of thermal modernisation works

The old plaster was hacked off and subsequently the thermal insulation of external building partitions was made using styrofoam. The window and door woodwork has been replaced with windows glazed with double panel and with a PVC profile and with insulated steel doors. Various methods were used for thermal insulation of the ceilings and roofs, and they included e.g.: injection of cellulose pellets, insulation with styrofoam panels laminated with roofing felt and additional soft double-layer insulation. The modernisation of the central heating and hot tap water consisted in replacement of radiators, re-



placement of vertical and horizontal pipelines, installation of control riser valves and cut-off valves, construction of heat distribution systems in each building. The constructed heat distribution systems enable automated temperature control depending on the external temperature and make it possible to change the weather curve setting to allow for the appropriate heat comfort to be obtained.

Task implementation in the conditions of a working hospital

The implementation of works took place in the conditions of a working hospital. The works carried out in the field of roofs and flat roofs represented no obstacles in the every-day functioning of the clinic and the dispensary or in the specified movements of patients within the hospital premises. Yet, the replacement of the window woodwork and modernisation of the central heating and hot tap water installation required a detailed work schedule to be developed, as well as substitute communication paths covering also the numerous building entrances. In order to do that, enormous organisational and co-ordinating measures were necessary. Proper organisation and information about the temporary obstacles reduced the risk of accidents. It was also important to assure order within the hospital, which was under constant monitoring because of the safety of the patients and the visitors. The simultaneous conduct of construction works and the therapeutic activity was possible only with the patients' understanding and co-operation of the hospital staff. Project implementation was completed in November 2012. Thanks to the thermal modernisation, the patients' treatment comfort improved considerably.

Thermal modernisation and environmental protection

In order to implement the task, the hospital made an ornithological expert's report, which indicated that there are popular bird species (kestrel, swifts, house sparrows, pigeons) within the facility's premises and some bat species. 39 breeding boxes were installed under the compensating measures. Their number and distribution on the hospital buildings and trees was specified in consultation with an ornithological expert.

Planned environmental effect:

The amount of avoided CO₂ emissions associated with energy savings as a result of project implementation – 1,110.2 Mg/year

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Project: Comprehensive thermal modernisation of the Centre for Patients with Mental and Neural Disorders in Sieniawka, Multidisciplinary Hospital IPHCI in Zgorzelec, stage 2

Beneficiary: Multidisciplinary Hospital Independent Public Health Care Institution in Zgorzelec

Total project cost: PLN 12,183,100

Co-financing: PLN 11,004,997

The largest thermal modernisation project in the hospital complex in Zgorzelec

The project covered the performance of a comprehensive thermal modernisation of four buildings of the Centre for Patients with Mental and Neural Disorders in Sieniawka, which comprises the hospital complex of the Multidisciplinary Hospital Independent Public Health Care Institution (MH IPHCI) in Zgorzelec. It was the largest and at the same time the most modern project from among the thermal modernisation projects in the Multidisciplinary Hospital IPHCI in Zgorzelec. The analyses and audits indicated that the most beneficial thermal modernisation solution will be to resign from the previous oil system with a central boiler room and to use heat pumps in smaller boiler rooms in individual buildings instead. Through the investment, the heating system capacity increased nearly fivefold.

A consortium of three companies that implemented the project designed and completed the following construction works: installation of mechanical supply and exhaust ventilation with recuperation, replacement of window and door woodwork, additional heat insulation of basement flat roofs and attics, modernisation of the central heating installation (a network of ground exchangers with vertical probes and distribution network was constructed, new heat sources were constructed), installation of heat pumps that co-operate with the oil condensing boilers in order to assure heat supply during the summit of demand, replacement of central heating internal installation (replacement of radiators with cables), modernisation of the hot tap water installation (along with the circulating installation and replacement of the sanitary fittings with a water-saving systems).



The implementation of the investment made it possible not only to improve the conditions in the existing hospital infrastructure and in the divisions in Sieniawka. It also enabled new plans and new ideas connected with the utilisation of the buildings. Owing to the thermal modernisation works, savings and improved capacity of the entire system, it is possible to plan the launch of new hospital wards.

Planned environmental effect:

The amount of avoided CO₂ emissions associated with energy savings as a result of project implementation – 1,453 Mg/year

FOR MORE INFORMATION CONTACT:

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Biomass-fired heating plant in EcoPowerPlant

The production plant belonging to the EcoPowerPlant specialises in the production of environmental fuel in the form of wood pellets and a mix of agricultural and forest-derived raw materials. The production of pellets requires the supply of process heat used to dry the raw materials. In order to facilitate the drying process, increase the pellet production and accomplish the Company's mission (to provide environmental fuel to households with the least possible negative impact on the natural environment), it was decided to use a technology that makes it possible to enhance the efficiency of heat generation and to gain additional electricity production. The extension of the heating facility consisted in the use of thermal oil circuit and an ORC module.

Two additional circuits for the heating medium were "inserted" in the drying facility's feeding process. One of them is a thermal oil facility, in which oil represents the heating medium, whose process temperature amounts to 300°C. Through the ORC module heat exchanger, the energy is transmitted to the silicone oil facility. Silicone oil with the boiling temperature amounting to ca. 50°C evaporates and under pressure of ca. 10 bar discharges the kinetic energy into the turbine, and subsequently it is cooled down in a silicone oil vapour condenser, discharging its energy into the water facility, which supplies the low-temperature drying facility. The turbine's kinetic energy drives the asynchronous generator with the nominal power of 1,900 kW. The electricity produced by the plant is used for the plant's own needs while the surplus is sold to the electricity grid.

During the facility's start-up period, results were obtained that exceeded any expectations. The facility reached the instantaneous powers that largely exceeded the generator's nominal powers – up to 2.0 MW. On the other hand, the average daily results (various demand for heat) exceed 1.7 MW. It should be pointed out that the planned production amounting to 8,000 h can be reached already in the first year of its operation (connection to the grid was carried out on 8 January 2013).

The facility under operation is fully automated and controlled remotely. The device producers constantly monitor (remotely) the operation of individual units throughout the whole start-up period. The operational system control takes place by means of screens with no necessity of direct intervention in the facility. The use of a biomass furnace fired with solid fuel – wood chips, a very efficient thermal oil system –





makes it possible to obtain a high co-generation coefficient amounting to 93-94%. This means that the facility also has all the features of a high performance facility.

Owing to the co-financing of the investment by GIS proceeds, it was possible to use the most advanced technologies allowing for the following environmental effects to be achieved: the use of an electrofilter that reduces dust emissions to 50 mg/m³, achievement of the high-performance co-generation coefficient, achieving and exceeding the generator's nominal power.

Planned effect:

The amount of avoided CO₂ emissions associated with energy savings as a result of project implementation – 26,683.2 Mg/year

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