# Operational Programme Infrastructure and Environment 2014-2020

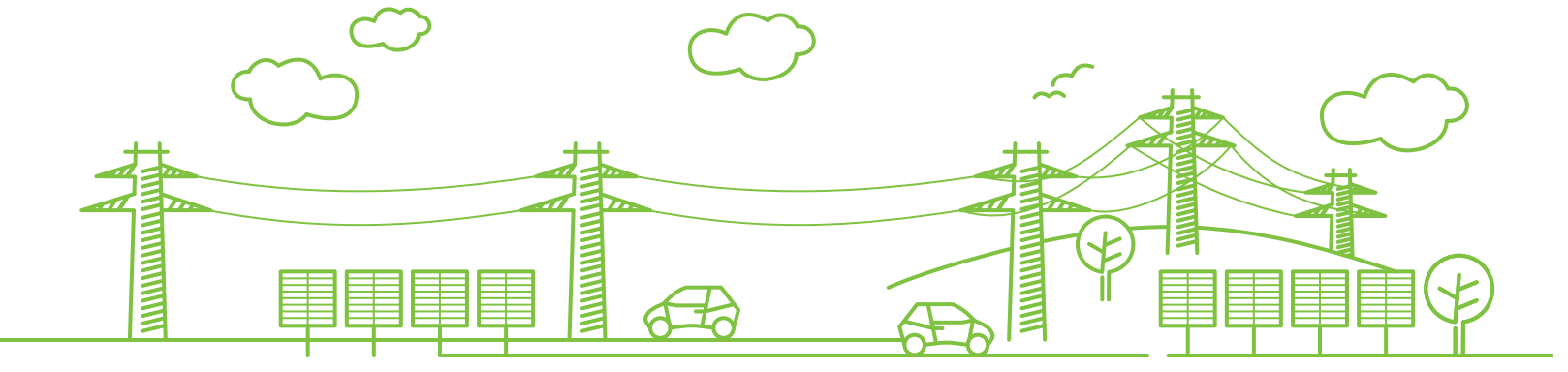
## ENERGY SECTOR

European Funds
Infrastructure and Environment

Republic of Poland

MINISTRY OF ENERGY

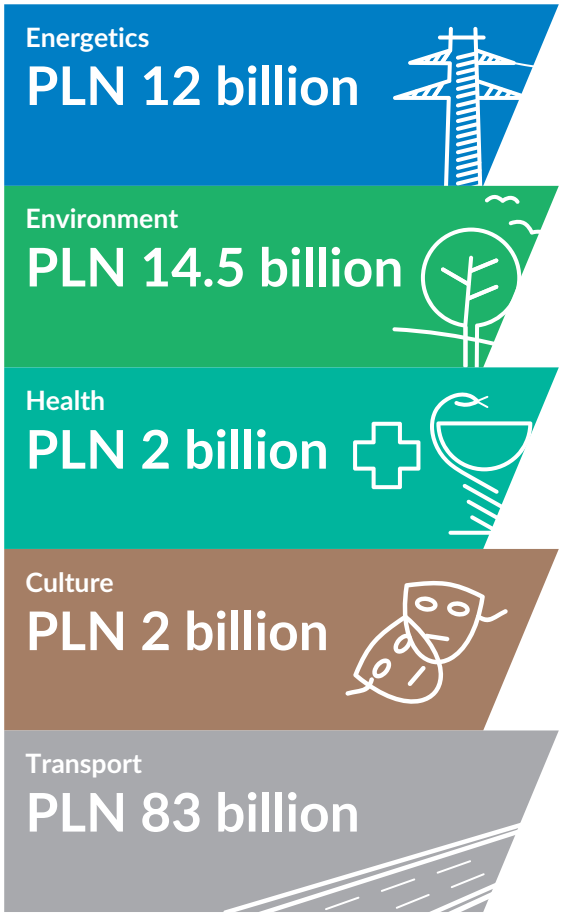
European Union
European Structural and Investment Funds

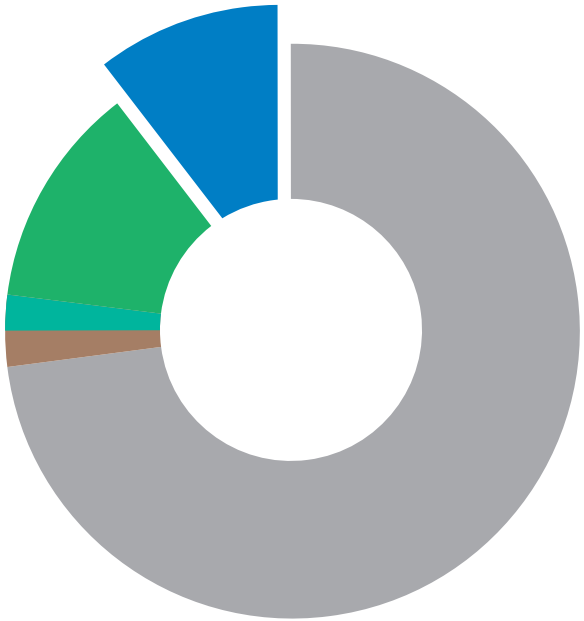


# Introduction

The Operational Programme Infrastructure and Environment 2014-2020 (OPIE 2014–2020) is the largest of the programmes financed by European Funds. More than EUR 27 billion was assigned to this programme out of more than EUR 82 billion allocated to Poland in the EU's budget for years 2014–2020. The OPIE 2014–2020 supports investments in environmental protection, adaptation to the climate change, transportation, low-emission economy, energy security, cultural heritage and health protection.

## Sectors supported by the OPIE in years 2014-2020



# Support for the energy sector

The Ministry of Energy, the National Fund for Environmental Protection and Water Management in Warsaw, the Oil and Gas Institute – State Research Institute in Cracov and the Voivodship Fund for Environmental Protection and Water Management in Katowice are the institutions involved in the implementation of projects co-financed by the OPIE in the energy area.

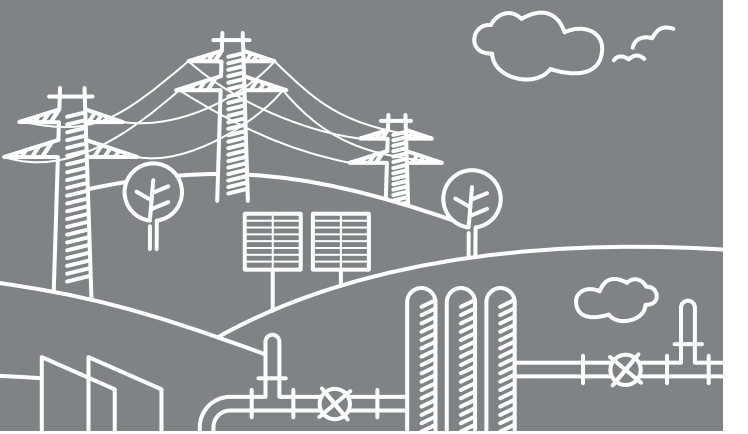
The energy sector, pursuing the low-emission and energy security goals, is one of the key areas supported by the programme. The Ministry of Energy is responsible for the foundation which total budget is PLN 12 billion. More than 600 contracts have been signed for implementation of more than PLN 20 billion worth of projects in the energy sector, including a co-financing of more than PLN 9 billion.

## Low-emission economy

>
**Renewable energy sources – water (> 5 MWe), wind (> 5 MWe), sun (> 2 MWe/MWth), geothermal (> 2 MWth), biogas (> 1 MWe), biomass (> 5 MWth/MWe)**
>
**High-efficiency cogeneration meaning associated production of electric energy and heat**
>
**Energy efficiency meaning reduced energy consumption after implementing a solution**
>
**Heating and cooling systems meaning networks with associated installations and equipment used for distribution of heat to consumers**
>
**Smart grids meaning electric power grids with communications between all market players serving to reduction of costs and improvement of efficiency of energy consumption**

## Energy security

>
**Transmission, distribution and storage of electric energy**
>
**Transmission and distribution of gas**



# Two main areas of support in the energy sector

Reduction of the economy's emissivity and energy security improvement of the country are the two main areas of support in the energy sector. Investments in high-efficiency cogeneration, increasement of energy production from renewable energy sources, improvement of energy efficiency, support for heating and cooling systems and strengthening of infrastructure crucial for transmission and distribution of gas and electric power are the key activities focused around Priority Axes I and VII of the OPIE 2014-2020.

**AXIS I: Reduction of the economy's emissivity** - **budget: EUR 1.8 billion**

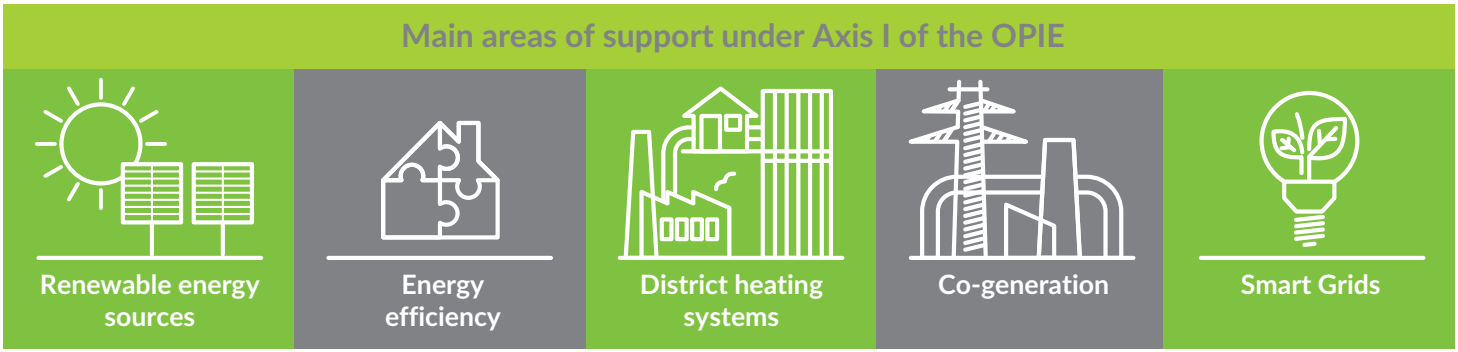
**AXIS VII: Improvement of energy security** - **budget: EUR 1 billion**

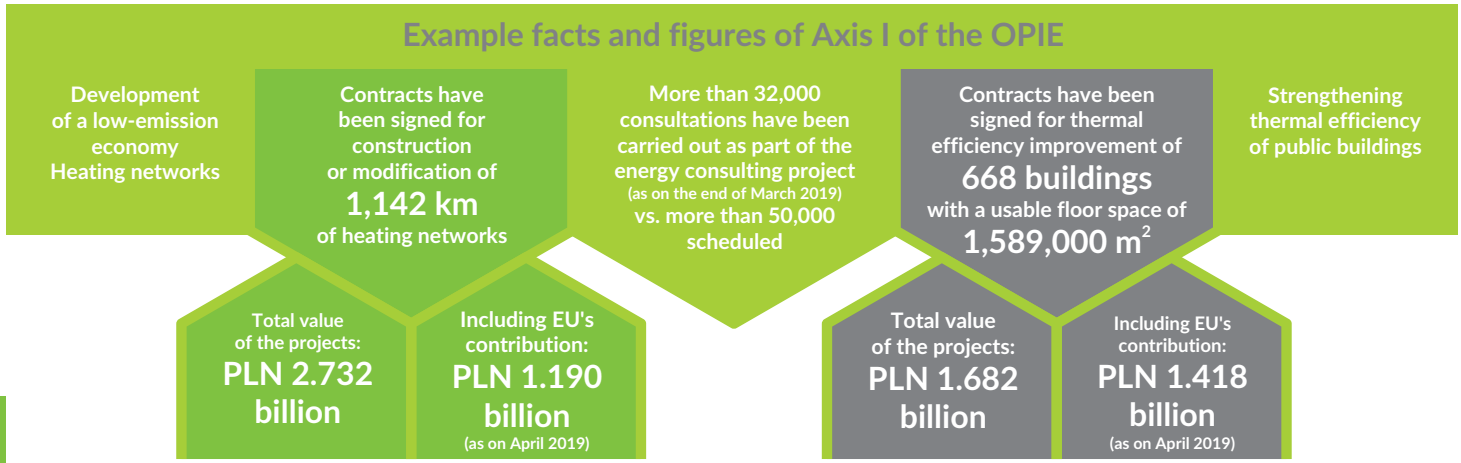
## PRIORITY AXIS I

### Goal: Reduction of the economy's emissivity

All activities taken under Priority Axis I of the OPIE 2014–2020 are intended to build a low-emission economy. The list of tasks leading to the achievement of this goal includes:
>Increasing efficiency of primary energy consumption;
>Improving energy efficiency in the public and residential sectors;
>Reducing energy consumption in enterprises;
>Increasing production of energy derived from renewable sources;
>Development of low and medium voltage smart grid systems;
>Construction or modification of heating networks.

Implementing a lot of various activities favors sustainable resource management, improvement of natural environment, increasing energy efficiency and providing the economy with a secure and competitive energy supply.



## PRIORITY AXIS VII

### Goal: Assuring energy security, stability and the continuity of supply

The support under Priority Axis VII focuses on extension, modification and retrofitting of energy infrastructure while ensuring the implementation of intelligent solutions.

Activities taken along Axis VII include the following, without limitation:
**> construction, extension and modification of the transmission and distribution infrastructure for assurance of sustainable supplies of gas;**
**> construction and modification of both transmission and distribution grids, replacement of transformers and construction, extension and modification of power stations.**

The mentioned project refers to the aspect of implementation of smart functionalities in the electric power and gas sectors.

# Results of implementing the Operational Programme Infrastructure and Environment in the energy sector

## Target effects of projects aimed at reducing the emission level of the economy:

> Estimated annual drop in the greenhouse gas emission – 875,000 tonnes of equivalent $CO_2$


> Decrease in the consumption of primary energy – 5,041,000 GJ/year

> Quantity of electric energy saved – 121,500 MWh/year

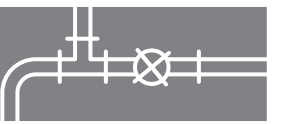
> Number of buildings energetically modernized: 452 (the target was exceeded)

> Length of newly built or upgraded district heating networks: 1,180 km

## Target results of implementing projects concerning improving of energy security:

> Length of newly constructed or retrofitted power grids: 717 km

> Length of newly constructed or retrofitted pipelines: 936 km



## MEASURE 1.1 of the OPIE 2014-2020

**Promoting the production and distribution of energy derived from renewable sources**

**SUB-MEASURE 1.1.1**

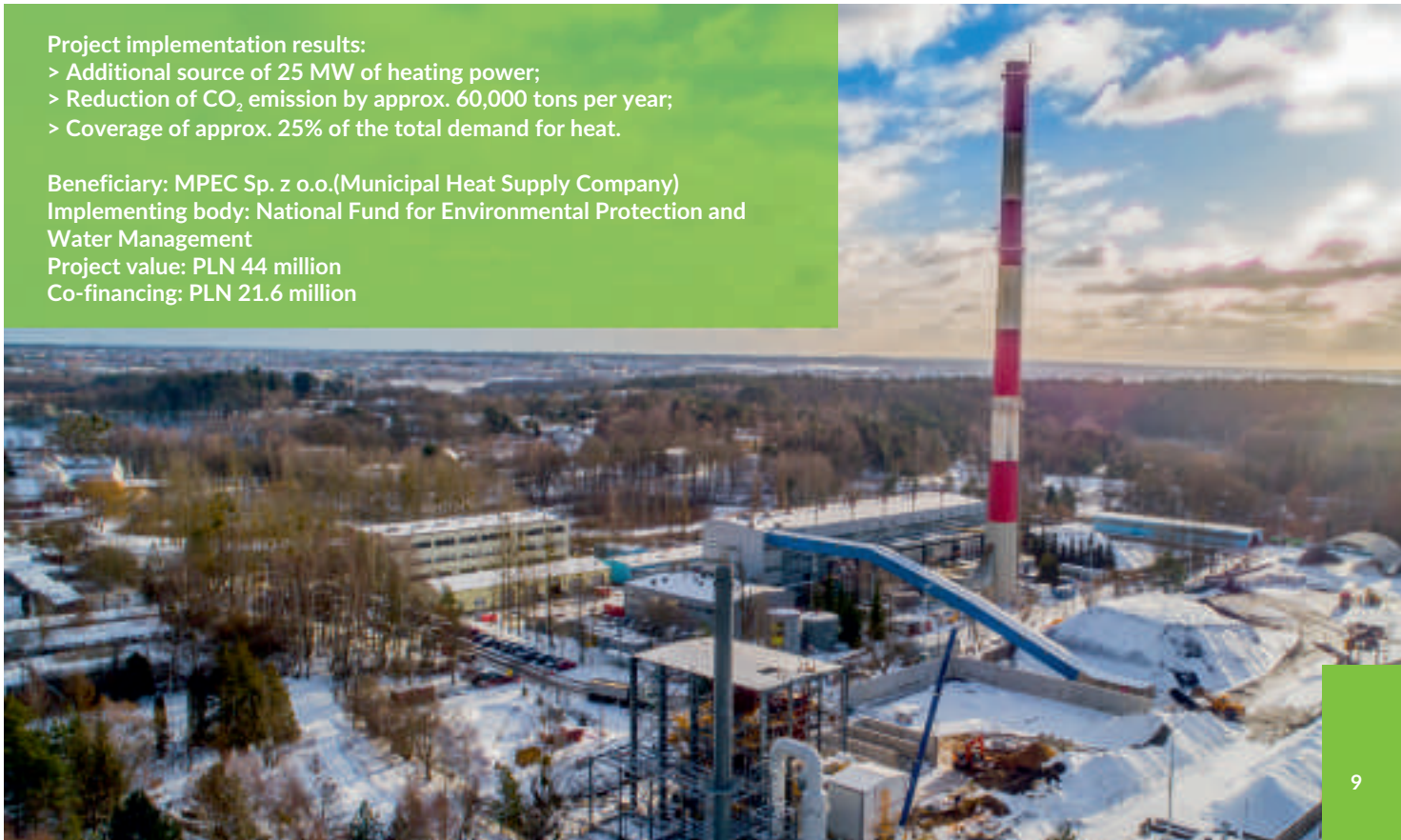
Support of investments related to the energy generation from renewable sources including the connection of these sources to distribution / transmission network.

### "Increase in energy production derived from renewable sources at MPEC Sp. z o.o. in Olsztyn through development of a biomass-fired heating plant"

The construction of the Kortowo Bio Heating Plant at the Słoneczna St. in Olsztyn is the first phase of the proposed upgrade of the Kortowo Heating Plant. The project is an important step towards diversification of fuels and an action that will make this heating system energy efficient. The annual input of 55,000 tons of wood chips coming from sustainable sources will cover up to 25% of the total demand for heat.

**Project implementation results:**
**> Additional source of 25 MW of heating power;**
**> Reduction of $CO_2$ emission by approx. 60,000 tons per year;**
**> Coverage of approx. 25% of the total demand for heat.**

**Beneficiary: MPEC Sp. z o.o.(Municipal Heat Supply Company)**
**Implementing body: National Fund for Environmental Protection and Water Management**
**Project value: PLN 44 million**
**Co-financing: PLN 21.6 million**



**SUB-MEASURE 1.1.2**
Promotion of projects related to construction and modification of networks enabling the connection of RES units. The supported projects include construction and modification of the at least 110 kV power grid for the connection of renewable energy sources.

## "Construction of the Choszczno II and Recz stations for facilitating development of renewable energy sources"

Increasing the potential of connecting renewable energy sources to the electric power grid is the main goal of the project.Smart grid functionalities will become a valuable extra. The contract for the co-financing of the project by the Cohesion Fund under the Operational Programme Infrastructure and Environment was signed in late 2016 and the construction work has been completed.

**Project implementation results:**
**> Retrofitting of the energy infrastructure;**
**> Increase of the potential connection of renewable energy sources to the electric power grids;**
**> Improvement of conditions of electric power supply;**
**> Development of a sustainable and efficient energy system;**
**> Improvement of the region's appeal to investors;**
**> Improvement of population's living standards.**

**Beneficiary: ENEA SA**
**Implementing body: Ministry of Energy**
**Project value: PLN 17.4 million**
**Co-financing: PLN 8.6 million**

## MEASURE 1.2
**Promoting energy efficiency and the use of renewable energy sources in enterprises**

Measure 1.2 consists of promoting energy efficiency and use of renewable energy sources in enterprises. The current areas of activity include application of energy-efficient technologies, development or expansion of in-house renewable energy sources or implementation of energy management systems.

## MEASURE 1.3
**Promoting energy efficiency in buildings**

Measure 1.3 consists of supporting energy efficiency and use of renewable energy sources in the public and residential sectors through energy efficiency retrofitting of public buildings (as part of sub-measure 1.3.1), energy efficiency improvement of residential buildings (sub-measure 1.3.2) and the systemic project for consultation on energy efficiency and renewable energy sources (sub-measure 1.3.3).

### "Integrated energy management system of the Opole University – Phase I: Complex of administrative and educational buildings at 48 Oleska St. in Opole"

The main goal of the project is to improve energy efficiency of facilities of the Opole University and to cut $CO_2$ emission through an in-depth and comprehensive energy efficiency improvement combined with installation of an energy monitoring and management system.

**Project implementation results:**
**> Better air quality;**
**> Limiting low emissions;**
**> Improvement of the local environment as a result of reduction of particularly harmful pollutants;**
**> Use of renewable sources for generation of energy for the buildings and for demonstration and educational purposes;**
**> Significant reduction of the cost of operation of the buildings.**

**Beneficiary: Opole University**
**Implementing body: National Fund for Environmental Protection and Water Management**
**Project value: PLN 3.4 million**
**Co-financing: PLN 2.7 million**

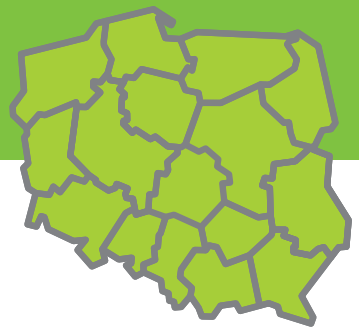
## "Comprehensive thermal efficiency improvement of apartment houses situated at the Wyszyńskiego St. in Łańcut, owned by the Łańcut Housing Cooperative, using renewable energy sources combined with a smart energy management system"

The project consisted of comprehensive thermal efficiency improvement of 3 multi-family buildings in Łańcut. One of the solutions, the powering of the staircase lighting from solar cells, is a novelty in the Podkarpackie Voivodship.

**Project implementation results:**
**> Decrease in the consumption of electric and thermal energy;**
**> Reduction of costs paid by residents;**
**> Reduction of $CO_2$ emission.**

**Beneficiary: Łańcut Housing Cooperative**
**Implementing body: National Fund for Environmental Protection and Water Management**
**Project value: PLN 1.35 million**
**Co-financing: PLN 0.9 million**

## "Country-wide system for consulting support for the public, residential and business sectors in the areas of energy efficiency and renewable energy sources"



Energy Consulting Project is based on country-wide network of professional energy advisers who provide free information concerning low emission economy, energy efficiency and renewable energy sources.

### Beneficiary:
**National Fund for Environmental Protection and Water Management in Warsaw**

### Partners:
**Voivodship Funds for Environmental Protection and Water Management, Marshal's Office of the Lublin Voivodship**

### Project value:
**PLN 128.9 million**

### Co-financing:
**PLN 128.9 million**

### Benefits for the environment
>
Reduction of environmental emissions
>
Better air quality
>
Less reliance on non-renewable natural resources

### Benefits for residents
>
Lower cost of energy
>
Energy-efficient projects as a viable source of revenues
>
Better living comfort
>
Responsible share in the consumption of energy

### Benefits for municipalities
>
Education for future municipal power engineers
>
Better quality of plans for building a low-emission economy
>
Implementation of investments in energy efficiency
>
Savings for municipal budgets

### Benefits for enterprises and for the whole economy
>
Smaller consumption of energy
>
Growth of the renewable energy market and new jobs
>
Corporate image building
>
Improved competitive edge of enterprises

More information is available on the Web sites of the Energy Consulting Project (www.doradztwo-energetyczne.gov.pl), the partnering Voivodship Funds for Environmental Protection and Water Management and the Marshal's Office of the Lublin Voivodship.

## MEASURE 1.4

**Developing and implementing low and medium voltage smart distribution systems**

The measure covers comprehensive projects aimed to implement smart solutions locally and, as a consequence, optimise and/or rationalise consumption of energy produced by renewable sources.

The modification of local networks to the smart grid standards consists of installation of smart meters and other automation of network. Replacement of medium voltage overhead disconnectors and of indoor switchgear is the main purpose of the project.

### "Development and upgrade of medium and low voltage grids in the Śląskie and Łódzkie voivodships for implementation of the smart grid design"

Tauron Dystrybucja S.A. is implementing the smart grid design in the Śląskie and Łódzkie voivodships. The process of construction and retrofitting of medium and low voltage grids includes 14 investments for improvement of energy security, quality and sustainability of power supply, reduction of grid losses for energy savings, and for provision of a technical conditions for absorption of new users including renewable energy sources.

**439.13 MWh/year**
of electric energy saved

**6,239**
number of additional smart grid users

**9**
smart functionalities

Beneficiary: Tauron Dystrybucja S.A.
Project value: PLN 8.2 million
Co-financing: PLN 3.9 million

# Investments in the smart grid

Energa-Operator SA has been granted more than PLN 166 million under the OPIE for investments in the Smart Grid. This is the largest subsidy allocated to any Distribution Grid Operator for development of the Smart Grid.

**"Modification of the grid to the Smart Grid standards by installing smart meters and by grid automation for mobilisation of clients, improvement of energy consumption efficiency,effective electric power system management and power supply security"**

The modification of power grids to the Smart Grid standards aims for power grids development. The project is underway in the licensed area of operations of Energa-Operator SA in the Łódzkie, Wielkopolskie, Zachodniopomorskie, Kujawsko-Pomorskie, Mazowieckie, Pomorskie and Warmińsko-Mazurskie voivodships.

The proposed project effects include accomplishment the smart grid functionality, reduction of transmission losses (energy savings) and establishment of an technical conditions for absorption of renewable energy sources. Improvement of quality and sustainability of energy supply to consumers is also very important.

The project will implement smart functionalities. For instance, the feature of automatic identification (and repair) of damaged grid segments will enable automatic resumption of power supply to consumers within less than 3 minutes from the failure of the medium voltage grid. The feature of dynamic grid reconfiguration will make it possible to forecast energy generation by renewable sources (wind and solar farms), and the effect of this contribution on the grid, at least 24 hours in advance. Other beneficial results of the project include the shortening of the "long interruption" (measured by the System Average Interruption Duration Index, SAIDI).

**8**
**smart functionalities**

**1,054.11 GJ/year**
**decrease in the consumption of primary energy**

**2,980,422**
**energy users connected to smart grids**

**97.60 MWh/year**
**of electric energy saved**

Beneficiary: Energa-Operator SA
Project value: PLN 240 million
Co-financing: PLN 166 million

## MEASURE 1.5
**Effective distribution of heat and cooling**

Measure 1.5 consists of retrofitting, construction or expansion of heating and cooling networks for replacement of local sources of heat.

**"Improvement of heat transmission efficiency through replacement of the thermal insulation of the overhead district heating networks in Stalowa Wola and in Niska"**

The project consists of retrofitting of the district heating system of the two towns and it aims to reduce losses on transmission and distribution of thermal energy. The project's tasks include replacement of the insulation with a new one along 3.66 km of the network of mains.

**Project implementation results:**
**> Reduction of emission of dusts and $CO_2$ for improvement of air quality;**
**> Savings for residents;**
**> Reducing the increase in tariffs for entrepreneurs and increasing their competitiveness on the local market.**

**Beneficiary: Heat Distribution Enterprise in Stalowa Wola**
**Implementing body: National Fund for Environmental Protection and Water Management**
**Project value: PLN 7.3 million**
**Co-financing: PLN 3.3 million**

## MEASURE 1.6

**Promoting the use of high-efficiency cogeneration of heat and electricity based on demand for useful heat**

SUB-MEASURE 1.6.1

The current areas of activity include development of new, or extension / modification of the existing, high-efficiency cogeneration units of the rated electric power larger than 1 MW.

### "Development of a 1.2 MW cogeneration system at Werner Kenkel Bochnia Sp. z o.o."

The implementation of this project consisting of installation of a high-efficiency cogeneration unit that gave Werner Kenkel based in Bochnia an additional capacity to generate 1.2 MW of electric energy and 1.211 MWt of heat. The benefits from the construction of the cogeneration system include a drop in the greenhouse gas emission level and the availability of the other, independent, source of electric energy.

**Beneficiary: Werner Kenkel Bochnia Sp. z o.o.**
**Implementing body: National Fund for Environmental Protection and Water Management**
**Project value: PLN 5.3 million**
**Co-financing: PLN 1.9 million**

**SUB-MEASURE 1.6.2**
**Heating and cooling networks for sources of high-performance cogeneration**

The support is directed towards the construction of heating or cooling networks (with grid connections) for municipals and living purposes. Projects related to construction of networks required for the connection of new consumers (existing buildings without own sources of heat and future developments) are eligible for entitlement.

## MEASURE 1.7
**Comprehensive elimination of low emissions in the Śląskie Voivodship**

**SUB-MEASURE 1.7.**
**Promoting energy efficiency in residential buildings in the Śląskie Voivodship**

This is support for investment projects regarding deep, comprehensive energy modernization of multi-family residential buildings. The scope of the support includes thermal insulation of building roofs, floors and outer walls, replacement of outer doors and windows, replacement of the lighting with energy-saving one, re-engineering of heating systems or provision of more energy efficient and greener sources of heat.

**SUB-MEASURE 1.7.2**
**Effective distribution of heat and cooling in the Śląskie Voivodship**

## "Retrofitting of heating networks in Ruda Śląska"

The project will modernise almost 5 km of existing heating networks including connections for heat supply to buildings in Ruda Śląska and will build 7 individual heating substations. This investment is intended to retrofit the old network of ducts through replacing the conventional lines with pre-insulated pipes furnished with electronic alert devices. This will reduce heat transmission losses and improve the overall efficiency of the system. In addition, the upgrade will minimise the risk of system failure.

**Project implementation results:**
**> Decrease in the consumption of end energy: 15,294.48 GJ/year;**
**> Decrease in the consumption of primary energy: 21,412.27 GJ/year;**
**> Estimated annual drop in the greenhouse gas emission: 1,681.70 tonnes of $CO_2$/year;**
**> Decrease in the emission of dusts: 1.56 tonnes/year.**

**Beneficiary: Węglokoks Energia ZCP Sp. z o.o.**
**Implementing body: Voivodship Fund for Environmental Protection and Water Management in Katowice**
**Project value: PLN 13.4 million**
**Co-financing: PLN 9.2 million**

**SUB-MEASURE 1.7.3**
**Promoting the use of high-efficiency cogeneration of heat and electricity in the Śląskie Voivodship**

Projects supported by this sub-measure include construction of heating or cooling networks (with connections) to enable utilisation of heat generated by high-efficiency cogeneration sources and, on the other hand, construction or expansion of these sources.

## MEASURE 7.1
**Development of intelligent storage, transmission and distribution systems**

**"Construction of a gas distribution network in areas not yet gasified in the Węgrów, Mińsk and Wołomin counties.""**

In the scope of the project will be built 48.76 km of gas networks in the Dobre, Strachówka, Jadów and Łochów municipalities, of which the latter three have never been gasified. Each of the municipalities covered by the project experiences a constant growth of housing resources and single-family houses are the prevailing form of development. The laying of gas distribution networks in these areas will improve the living quality for the local populations and will improve the competitive appeal of each of the municipalities

**Project implementation results:**
**> Gasification of households;**
**> Clean and safe thermal energy medium for residents;**
**> Conservation of environmental merits of the municipalities.**

**Beneficiary: SIME Polska Sp. z o.o.**
**Implementing body: Oil and Gas Institute – State Research Institute**
**Project value: PLN 11.6 million**
**Co-financing: PLN 6.8 million**

## "Extension of the functionality of the LNG terminal in Świnoujście"

The construction of the LNG terminal in Świnoujście has made a significant contribution to the energy security of Poland. Further extension of the terminal will provide additional benefits for the country's energy sector.

**The extension of the functionality of the LNG terminal in Świnoujście includes the following:**
**> Expansion of the Submerged Combustion Vaporizer (SCV) regasification system;**
**> Increase of the rated output capacity and of the peak regasification capacity;**
**> Extension of the seashore reloading system (addition of another wharf);**
**> Extension of the onshore train loading system;**
**> Construction of the 3rd LNG tank of 180 000 m³ capacity with associated infrastructure and equipment for the in-process storage of LNG.**
**The implementation of the project will enable achievement of the following goals:**
**> Provision of additional modes of receipt of gas delivered by sea;**
**> Larger capacity to regasify and dispatch natural gas;**
**> Additional capacity for the in-process storage of LNG;**
**> Provision of a LNG replenishment point for the bunkering at the Świnoujście Seaport;**
**> Possibility of reloading LNG to smaller tank ships;**
**> Provision of an alternative point for receipt of LNG from large ships (up to approx. 216,000 m³);**
**> Addition of transshipment to the service portfolio.**

**Beneficiary: Polskie LNG SA**
**Implementing body: Oil and Gas Institute – State Research Institute in Cracow**
**2014-2020 perspective**

**Requested co-financing: PLN 553 million**
**Project value: PLN 1 billion**
**The development of the terminal was also financed under the OPIE for years 2007-2013**
**Project value: PLN 3.5 billion**
**Co-financing: PLN 888 million**

# Conclusions

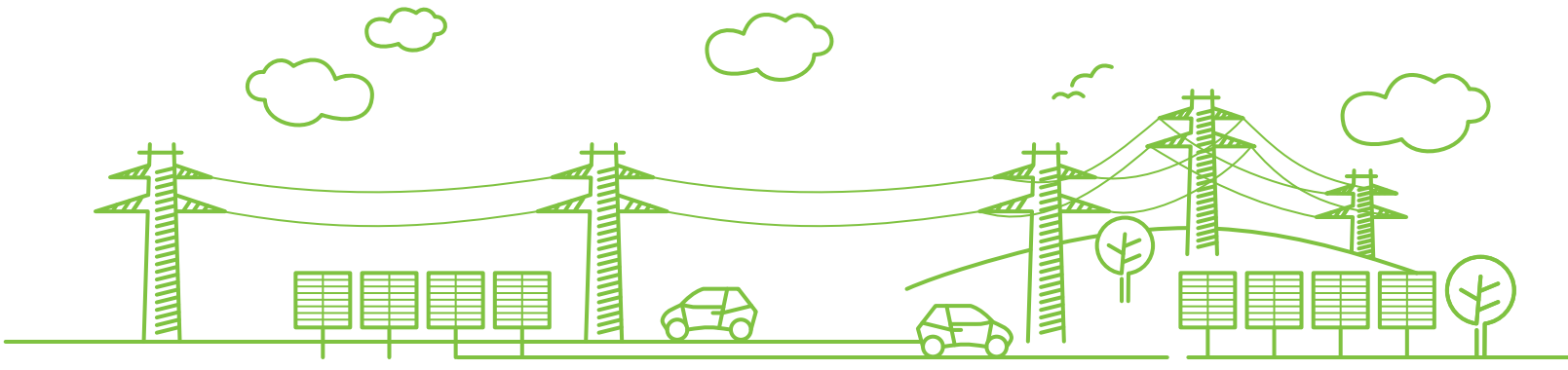
Projects for the energy sectors co-financed by the Operational Programme Infrastructure and Environment 2014-2020 are being implemented throughout the country. They include a number of important and much needed investments in:

**construction or retrofitting of:**

- **transmission and distribution gaspipelines**
- **power transmission and distribution grids**

- **increasing energy efficiency in the public, residential and business sectors**
- **production of energy derived from renewable sources**
- **construction or modification of heating systems**
- **construction/ expansion of high-efficiency cogeneration sources**

The scale of these projects brings measurable benefits for local communities, enterprises and institutions.
The investments contribute to the reduction of the economy's emissivity and improve the energy security.



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