



MINISTERSTWO ENERGII



Województwo  
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INWESTYCJI I ROZWOJU



# Eco – innovation / advanced coal technologies

**STRATEGIC PROJECTS**

Brussels, 26-27 February 2018



Rzeczpospolita  
Polska



Unia Europejska  
Europejskie Fundusze  
Strukturalne i Inwestycyjne



# Mine water as a potential source of geothermal heat

## Scope

- Determination of geothermal potential of mine waters
- Pilot implementation of mine water heat pump instalations

## Challenge

**Economy**

Quality of life

Humal capital

Type of a project: **COMPLEX / project duration 3 years**

Estimated budget: **3,8 m Euro**

Coordinator: **Central Mining Institute**

Implementor: **Central Mining Institute / PGG, SRK, Tauron, JSW**

**Readiness of partners to participate in realization in 2018**

**Inter-sectoral partnership**

**Multilevel partnership**

# European Centre for the Coal Mine Methane (CMM) Power - Research and Implementation Centre for the CMM technology

## Scope

- optimization of the use and application of existing resources of post-mining gases to the power industry
- meeting the methane emission requirements; the use of mine gases by the power industry; minimization of emissions to the atmosphere

## Challenge

**Economy**

**Quality of life**

Humal capital

Type of a project: **PROGRAMMATIC**

Estimated budget: **to be defined (feasibility study)**

Coordinator: **Jastrzębska Spółka Węglowa**

Implementor: **Jastrzębska Spółka Węglowa**

**Readiness of partners to  
participate in realization  
in 2018**

**Inter-sectoral  
partnership**

**Multilevel partnership**

# Electricity production in Sub-Surface Pumped Storage Hydro Power Plant – SPSHP along with local Energy storage

## Scope

- Utilization of an existing mining shaft for the construction of a pumped storage hydro power plant
- economic utilization of coal mining side products from non-existing mines

## Challenge

Economy

Quality of life

Humal capital

Type of a project: **COMPLEX / project duration 60 months**

Estimated budget: **280 mln Euro (development of new SPSHP ca. 100 MW)**

Coordinator: **Jastrzębska Spółka Węglowa - JSW**

Implementor: **Jastrzębska Spółka Węglowa (Cenral Mining Institute R&D)**

Readiness of partners to participate in realization in 2018

Inter-sectoral partnership

Multilevel partnership

# Hydro-Pyrolisis Waste-to-Energy Installation with hydrogen reactor

## Scope

- no-air, hydrogen-accelerated transformation of waste into relatively clean Syngas
- Utilization of sludge and post-production waste from the abandoned coal mine

## Challenge

Economy

Quality of life

Humal capital

Type of a project: **COMPLEX / project duration 60 months**

Estimated budget: ***to be defined after commencement of the analytic works***

Coordinator: **Jastrzębska Spółka Węglowa - JSW**

Implementor: **Jastrzębska Spółka Węglowa - JSW**

Readiness of partners to  
participate in realization  
in 2018

Inter-sectoral  
partnership

Multilevel partnership

# Upgrading of the existing Renovation Plant into a modern centre for renovation and production of transport and other industries

## Scope

- innovative approach to the infrastructure of liquidated mines, through the use of existing railway sidings, buildings and power supply in the media
- as a result of the modernization of the entire dedicated infrastructure, a center for renovation, modernization and production of modern means of transport and other constructions will be created

## Challenge

Economy

Quality of life

Humal capital

Type of a project: **COMPLEX / 60 months / KRUPIŃSKI MINE AREA**

Estimated budget: ***based on the feasibility study (pred. 23 – 46 m Euro)***

Coordinator: **Jastrzębska Spółka Węglowa - JSW**

Implementor: **Jastrzębska Spółka Węglowa - JSW**

Readiness of partners to participate in realization in 2018

Inter-sectoral partnership

Multilevel partnership

# Silesian innovation campus

## Scope

- creation of a didactic-scientific-research complex with recreational facilities

## Challenge

Economy

Quality of life

Humal capital

Type of a project: **COMPLEX / 2019 - 2022 / KRUPIŃSKI MINE AREA**

Estimated budget: *part of a complex revit. and investment program*

Coordinator: **Jastrzębska Spółka Węglowa - JSW**

Implementor: **Jastrzębska Spółka Węglowa - JSW**

Readiness of partners to participate in realization in 2018

Inter-sectoral partnership

Multilevel partnership

# Photovoltaic farms in areas degraded by mining and energy industries

## Scope

- Construction of photovoltaic farms on dumps will allow us to use degraded areas and to increase power generation from renewable sources

## Challenge

Economy

Quality of life

Humal capital

Type of a project: **COMPLEX / 30 months**

Estimated budget: **4,5 m Euro**

Coordinator: **Tauron**

Implementor: **Tauron**

Readiness of partners to participate in realization in 2018

Inter-sectoral partnership

Multilevel partnership

# Development of the post-mining management system tools in Silesia (OPI TPP 2.0)

## Scope

- improvement of the Environmental Management System in Silesian Voivodship;
- to integrate sustainable development based on comprehensive information on post-mining areas

## Challenge

**Economy**

Quality of life

Humal capital

Type of a project: **COMPLEX / 2 years**

Estimated budget: **1,3 m Euro**

Coordinator: **Central Mining Institute**

Implementor: **Central Mining Institute**

**Readiness of partners to participate in realization in 2018**

**Inter-sectoral partnership**

**Multilevel partnership**

# Production of liquid fuels from coal

## Scope

- Coal gasification in industrial installations on the surface (obtaining syngas for energy production, liquid fuels, methanol production) production of high-calorific synthesis gas by underground coal gasification in deep sediment deposits
- Investment in an energy block connected with the installation of coal gasification (IGCC)
- Production of synthetic gas using the GlidArc Assisted Coal Oxidation method
- Underground coal gasification by the shaft method

## Challenge

Economy

Quality of life

Humal capital

Type of a project: **COMPLEX**

Estimated budget: *to be estimated*

Coordinator: **Grupa Azoty ZA KĘDZIERZYN / PPG**

Implementor: **Grupa Azoty ZA KĘDZIERZYN / PGG / Central Mining Institute**

Readiness of partners to participate in realization in 2018

Inter-sectoral partnership

Multilevel partnership

# Production of smokeless fuels with the maximum volatile matter content of 10% / Briquetting of thermal coals with the use of highly calorific materials /eco peas

- Scope**
- production of fuels with volatile matter reduced to the maximum
  - Reduction of environment pollution, removal of household emissions, reduction of smog and dust in the air
  - obtaining a homogeneous mixture of coal sludge with even
- Challenge** distribution of mineral additives

Economy

Quality of life

Humal capital

Type of a project: **COMPLEX / 3 years**

Estimated budget: **11 – 12 m Euro**

Coordinator: **Polska Grupa Górnicza - PGG**

Implementor: **Polska Grupa Górnicza – PGG / Central Mining Institute / Institute for Chemical Processing of Coal**

Readiness of partners to participate in realization in 2018

Inter-sectoral partnership

Multilevel partnership

# Technology of heat recovery from machines, recovery of mine water and mine air

## Scope

- Recovery of heat generated by mining machinery and equipment, heat from ventilation air and geothermal heat of underground water

## Challenge

Economy

Quality of life

Humal capital

Type of a project: **COMPLEX / 5 years**

Estimated budget: **58 m Euro**

Coordinator: **Polska Grupa Górnicza - PGG**

Implementor: **Polska Grupa Górnicza – PGG**

Readiness of partners to  
participate in realization  
in 2018

Inter-sectoral  
partnership

Multilevel partnership

# Hydrogen production from coke-oven gas

## Scope

- Development of hydrogen economy based on available streams of industrial gas - coke-oven gas
- Reduction of pollutant emissions to the atmosphere

## Challenge

Economy

Quality of life

Humal capital

Type of a project: **COMPLEX / approx 4 years**

Estimated budget: **47 m Euro**

Coordinator: **JSW KOKS (subsidiary of Jastrzębska Spółka Węglowa)**

Implementor: **JSW KOKS / Institute for Chemical Processing of Coal**

Readiness of partners to participate in realization in 2018

Inter-sectoral partnership

Multilevel partnership

# Storage of electric power to compensate for increased consumption of energy during the afternoon peak

## Scope

- designing an innovative storage heater for the purpose of storing energy. The heaters will work on electric power during off-peak periods at night
- Reduction of harmful environmental effects of individual household heating and improvement of air quality

## Challenge

Economy

Quality of life

Humal capital

Type of a project: **COMPLEX / 3 years**

Estimated budget: **12 m Euro**

Coordinator: **Tauron**

Implementor: **Tauron / Central Mining Institute /  
Institute for Chemical Processing of Coal**

Readiness of partners to  
participate in realization  
in 2018

Inter-sectoral  
partnership

Multilevel partnership

# Technological centre for CO<sub>2</sub> capture and storage

## Scope

- research on improvement of CO<sub>2</sub> capture and utilisation methods. The scope will be to minimise the costs of carbon capture and of methods of its utilisation.

## Challenge

Economy

Quality of life

Humal capital

Type of a project: **COMPLEX / 5 - 6 years**

Estimated budget: **38 m Euro**

Implementor / coordinator: **Tauron / Central Mining Institute / PGG  
Institute for Chemical Processing of Coal**

Readiness of partners to  
participate in realization  
in 2018

Inter-sectoral  
partnership

Multilevel partnership

# Development of suspension fuel

## Scope

- suspension fuel is an attractive substitute for fossil fuels and for furnace oil and it is produced on the basis of coal mining by-products
- Utilisation of stored by-products of coal mining and of mechanical processing of coal

## Challenge

Economy

Quality of life

Humal capital

Type of a project: **COMPLEX / 2 years**

Estimated budget: **2 m Euro**

Coordinator: **Węglokoks**

Implementor: **Węglokoks / Institute for Chemical Processing of Coal**

Readiness of partners to participate in realization in 2018

Inter-sectoral partnership

Multilevel partnership

# Utilisation of methane from coal mine ventilation air

## Scope

- Reduction of the effects of released methane as a gas of high greenhouse effect potential
- Reduction of CH<sub>4</sub> emissions to the atmosphere

## Challenge

Economy

Quality of life

Humal capital

Type of a project: **COMPLEX / 3 years**

Estimated budget: **10 m Euro**

Coordinator: **Węglokoks**

Implementor: **Węglokoks / Institute for Chemical Processing of Coal / The Institute of Chemical Engineering of the Polish Academy of Science**

Readiness of partners to participate in realization in 2018

Inter-sectoral partnership

Multilevel partnership

# Catalytic Direct Conversion of Coal to Liquid Fuels and Value-added Chemicals

## Scope

- elaboration of fundamentals for an industrial process for conversion of coals of different origin and characteristics to liquid fuels and value-added chemical feedstocks

## Challenge

**Economy**

Quality of life

Humal capital

Type of a project: **COMPLEX / 6 years (R&D 3 years, Demonstration 3 years)**

Estimated budget: **3,5 m Euro**

Coordinator: **Central Mining Institute**

Implementor: **Central Mining Institute**

**Readiness of partners to participate in realization in 2018**

**Inter-sectoral partnership**

**Multilevel partnership**

# Exploitation of methane using underground directional drainage boreholes

## Scope

- elaboration of an effective technique of methane exploitation using underground directional drainage boreholes in order to replace effective but very costly „drainage galleries”

## Challenge

Economy

Quality of life

Humal capital

Type of a project: **COMPLEX / 5 years**

Estimated budget: **4 m Euro**

Coordinator: **Central Mining Institute**

Implementor: **Central Mining Institute**

Readiness of partners to participate in realization in 2018

Inter-sectoral partnership

Multilevel partnership

# Activated carbon and coke for removal of mercury from waste gas

## Scope

- Using activated carbon and coke will allow us to reduce mercury emissions of the power industry
- Using the existing infrastructure and economic potential of highly industrialised areas

## Challenge

**Economy**

**Quality of life**

Humal capital

Type of a project: **COMPLEX / 40 months**

Estimated budget: **24 m Euro**

Coordinator: **JSW KOKS**

Implementor: **JSW KOKS**

**Readiness of partners to participate in realization in 2018**

**Inter-sectoral partnership**

**Multilevel partnership**

# Modern processing of coke-oven tar

## Scope

- The construction of a modern coke-oven tar processing facility will allow us to obtain modern products from the material obtained in coking plants all over the country.
- Using highly processed products (of coke oven tar processing) in modern sectors will contribute to air quality improvement

## Challenge

**Economy**

**Quality of life**

**Humal capital**

Type of a project: **COMPLEX / 40 months**

Estimated budget: **70 m Euro**

Coordinator: **JSW KOKS**

Implementor: **JSW KOKS**

**Readiness of partners to participate in realization in 2018**

**Inter-sectoral partnership**

**Multilevel partnership**

# Production of composite fuel for household heating

## Scope

- Appropriate processing of flotation concentrates by their compacting allows us to produce composite fuels which can be used in the household heating sector

## Challenge

**Economy**

**Quality of life**

**Humal capital**

Type of a project: **COMPLEX / 30 months**

Estimated budget: **3,5 m Euro**

Coordinator: **JSW Innowacje**

Implementor: **JSW Innowacje**

**Readiness of partners to participate in realization in 2018**

**Inter-sectoral partnership**

**Multilevel partnership**

# A modular mine methane utilization system IUMK-1000 (Pniówek)

## Scope

- The aim of the project is to develop a modern and environmentally friendly oxidation technology for methane contained in the ventilation air of the mines (VAM) - Pniówek
- Reduction of greenhouse gas emissions

## Challenge

**Economy**

Quality of life

Humal capital

Type of a project: **COMPLEX**

Estimated budget: **to be estimated**

Coordinator: **AGH University of Science and Technology**

Implementor: **AGH University of Science and Technology**

**Readiness of partners to  
participate in realization  
in 2018**

**Inter-sectoral  
partnership**

Multilevel partnership

# Electromobility Development Plan / New Mobility in the Silesian Metropolis

## Scope

- creating conditions for the development of electromobility of Poles by popularizing charging infrastructure and encouraging the purchase of electric vehicles
- development of the electromobility industry
- stabilization of the power grid by integrating vehicles with the network
- Actions leading to the implementation of charging infrastructure for electric vehicles (both public transport and private vehicles)

## Challenge

**Economy**

**Quality of life**

**Humal capital**

## Type of a project

Horizontal

**Readiness of partners to participate in realization in 2018**

**Inter-sectoral partnership**

**Multilevel partnership**

# Construction of a synthesis gas production plant through the degassing of raw materials in a hydrogen atmosphere

## Scope

- construction of a model degassing installation of raw materials, which would also provide the opportunity for further development of this technology based on Silesian universities and institutes

## Challenge

**Economy**

**Quality of life**

Humal capital

## Implementator

Silesian University of Technology Polgrafen

**Readiness of partners to participate in realization in 2018**

Inter-sectoral partnership

Multilevel partnership



**Thank You for Your attention**