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Mineral and Energy Economy Research Institute PAS - Activities within geothermal area

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Director, MEERI PAS

Opening Event, the FM EEA „KeyGeothermal” Project
9.02.2021



Mission of MEERI PAS

- Mineral and Energy Economy Research Institute was established in 1986 in Krakow as a constituent unit of the Polish Academy of Sciences
- Highly interdisciplinary research activity of MEERI PAS in the area of minerals and energy management covers such subjects as: mining, geology, power engineering, environmental engineering, supplemented by issues related to economics, law, geophysics, chemical engineering, materials science, processing engineering.
- Mission of the Mineral and Energy Economy Research Institute, Polish Academy of Sciences is to deliver modern, economic, ecological and social solutions serving sustainable development of Poland and its regions in the area of minerals and energy, implemented under motto:

Minerals and Energy for Society

- This mission is to be implemented through rationally programmed and interrelated R&D, organizational, technical and economic activities in the areas:

Sources – Technologies – Economics – Market – Environment

in the scientific triangle:

Research – Innovation - Education



MEERI PAS in numbers

More than

100

Employees, including about 50 persons of scientific staff



50

High academic standing of the Institute (category "A")

A

The Institute's scientific profile:

4

Departments, consisting of several divisions



Over

30

Years of activity



Approximately

150

Scientific publications per year, including over 30 at JCR list

90

Research projects carried out each year, including 5 to 10 international ones



50

Cooperation with several foreign and over 30 domestic research units

OVER

100

Business entities in the country and abroad, for which the Institute carries out research works





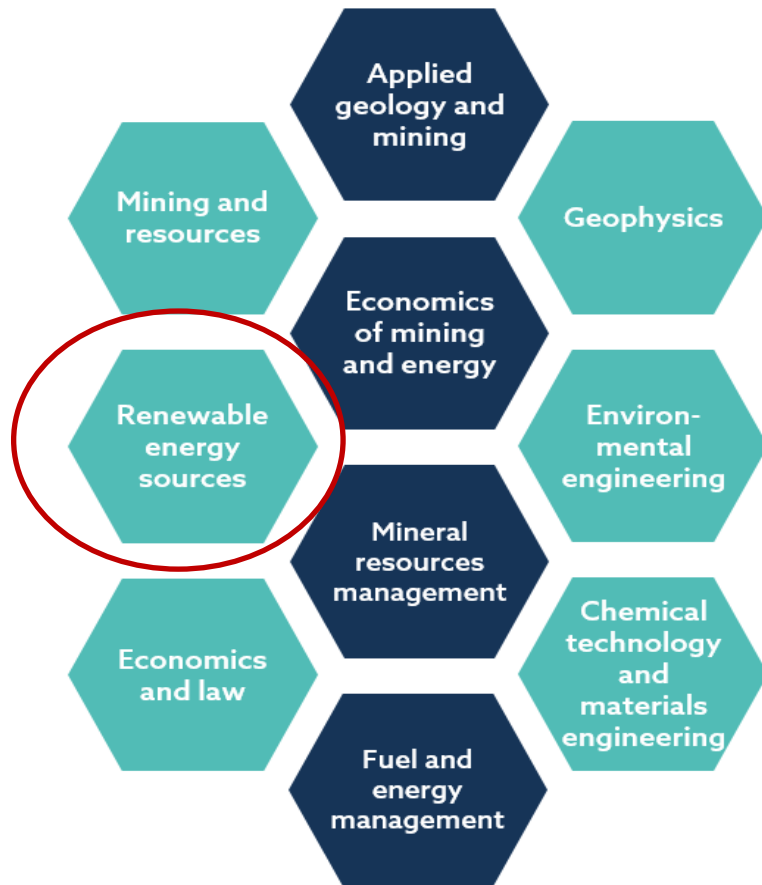
MEERI PAS organisation structure

DEPARTMENT OF STRATEGIC POLICY AND RESEARCH	<ul style="list-style-type: none">• Division of Strategic Research• Division of Energy Economics• Division of Sustainable Development of Minerals and Energy
DEPARTMENT OF MINERALS AND ENERGY MARKET RESEARCH	<ul style="list-style-type: none">• Division of Minerals Production• Division of Fuels and Energy Market Research• Division of Mineral Policy• Division of Economic Geology
DEPARTMENT OF GEOENGINEERING AND ENVIRONMENTAL ENGINEERING	<ul style="list-style-type: none">• Division of Geoengineering and Environmental Engineering• Division of Geotechnology• Division of Applied Geochemistry and Environmental Engineering• Division of Biogenic Raw Materials
DEPARTMENT OF RENEWABLE ENERGY AND ENVIRONMENTAL RESEARCH	<ul style="list-style-type: none">• Division of Renewable Energy Sources• Division of Environmental Studies and Waste Management• Division of Structural Analyses and Geological Cartography

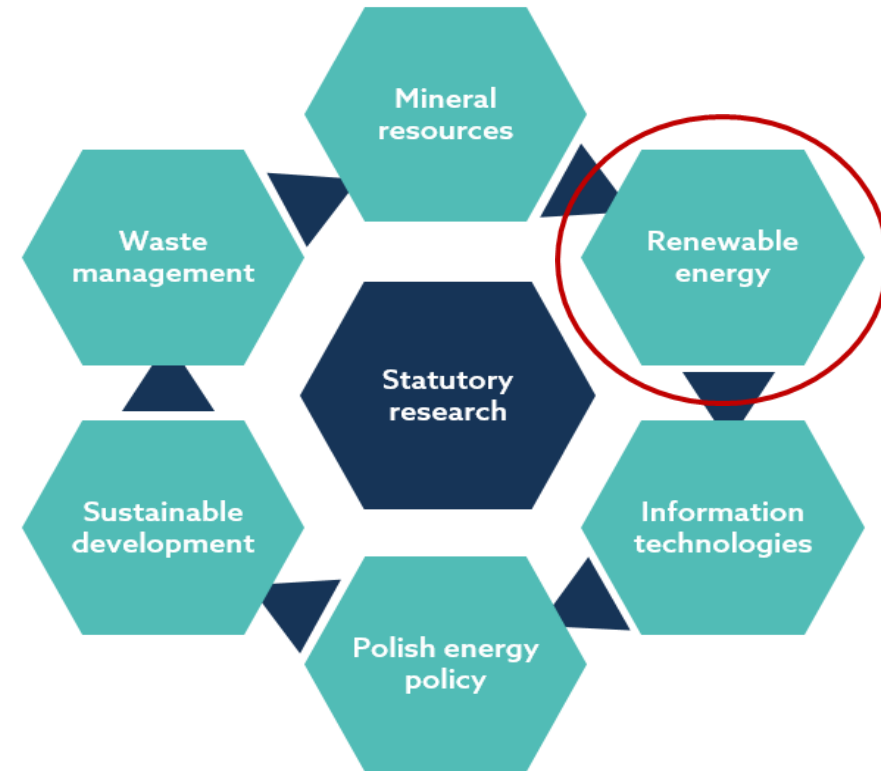


MEERI PAS scientific profile

FIELDS OF RESEARCH AND DEVELOPMENTS EXPERTISE:



THE SCOPE OF SCIENTIFIC RESEARCH:





MEERI PAS R&D activities

COOPERATION AND SOURCES OF REVENUES:

Kopalnia Soli „Wieliczka” Grupa Lotos
PGNiG Cyfronet PGE PEC Geotermia Podhalańska
KPMG Zakłady Górnicze „Trzebionka” Węgllokoks
MPEC Deloitte KGHM Polska Miedź
LW „Bogdanka” Geotermia Mazowiecka
Gorczańskie Wody Termalne Agencja Restrukturyzacji Przemysłu
Polska Grupa Górnicza
Management Consultans Amplio Darley Energy Poland
Gaz System Grupa Tauron
Państwowy Instytut Geologiczny
Darley Energy Poland Elpologistyka Połaniec
TF Silesia Grupa Enea PWC
Jastrzębska Spółka Węglowa

IN THE LAST 6 YEARS WE HAVE COMPLETED:

- Over 40 international R&D projects (12 international R&D projects are currently being implemented),
- Ca. 30 valuable domestic projects,
- Over 250 research services for business entities,
- Almost 100 studies for governmental units and regional and local authorities.

Income from research activities and the implementation of R&D projects accounts for 45-60% of our revenues.



MEERI PAS international projects in last years

Type of the project	Number of projects
5 th EU Framework Programme	5
6 th EU Framework Programme	7
7 th EU Framework Programme	4
Horizon 2020	11
EEA grants	5
KIC Raw Materials grants	12
Other international	4
Structural funds	9
Foresights	3
Total	60



MEERI PAS activities in the geothermal area: Division of Renewable Energy Sources

- Leading body in geothermal energy research, R&D, projects development and operation of geothermal plants in Poland
- Cooperation with leading scientific institutions, government bodies, companies, and Non-Governmental Organisations



Current MEERI PAS office building
Wybickiego 7A, 31-261 Krakow, Poland



Podhale Region: MEERI PAS Geothermal Laboratory
1st in Poland Experimental Geothermal Plant
(since 1993)

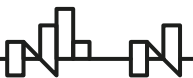


MEERI PAS achievements in geothermal / RES area

- Design and constructing the Poland's first experimental geothermal plant in Poland (Podhale R.)
- The first in Poland reconstruction of existing deep well Mszczonów IG-1 for heating purposes
- Methods and assessment of the environmental effects of RES' usage
- The the guidelines to improve the injectivity of reservoir rocks in the Polish geothermal plants
- Structural and digital models of the subsurface structure of many geostructural basins in Poland
- Numerical modelling of heat and mass flow in the geothermal reservoirs
- Mathematical modelling of energy systems – incl. the optimal management of geothermal waters to obtain heat and electricity in selected area of Podhale
- Atlas of thermal waters for the combined electricity & heat generation by applying binary systems in Poland
- Effective use of geothermal water and energy (applying membrane processes)
- Experimental cascaded geothermal energy uses' system.

Selected international geothermal projects participated by MEERI PAS

- **IGET** – Integrated Geophysical Methods for Exploration of Deep Geothermal Systems (2005-2009, 6FP)
- **GTR-H** – Geothermal Regulations – Heat (Altener, 2006 – 2009)
- **GEOCOM** – Geothermal Communities (2010 – 2014, 7 FP)
- **GeoDH** – Promote Geothermal District Heating in Europe (IEE, 2012-2014)
- **EUBILD-UNAKLIM** – European Educational Concept in Environmental-Nature- and Climate-Protection to Safeguard Cross-Border Sustainable Development (2016-2019)
- **GEORISK** – Development of geothermal and other RES projects by reducing their risk (2018-2021, Horizon2020)
- **Geo4Food** – Water-Energy-Food Nexus: Geothermal water for agriculture (2019-2022, Polish-Turkish Cooperation Programme)





International geothermal project participated by MEERI PAS co-financed by EEA FM, NMF

First „geothermal” EEA FM projects with Polish and Icelandic partners

- Geothermal potential in Poland – town Poddębice, 2016–2017.
EEA FM. MEERI PAS, AGH-University of Science and Technology, Orkustofnun / NEA
- Geothermal energy – a basis for low-emission heating, improving quality of life and health conditions , 2017.
EEA FM. MEERI PAS, MF EOG. MEERI PAS, AGH-University of Science and Technology, Wrocław Technical University, Orkustofnun, CMI, EGEC
- Poprawa efektywności wykorzystania energii geotermalnej poprzez dopasowanie charakterystyki odbiorcy (User4GeoEnergy), 2020–2023. EEA FM, Norway Grants. MEERI PAS, Orkustofnun, other partners
- CO₂-Enhanced Geothermal Systems for Climate Neutral Energy Supply (EnerGizerS), 2020–2023.
NMF POLNOR. AGH, IGSMiE PAN, inni krajowi partnerzy, partnerzy z Norwegii
- **„Capacity building of the Key Stakeholders in the Area of Geothermal Energy” (KeyGeothermal), 2020–2024. EEA FM. MEERI PAS, Orkustofnun**



MEERI PAS Developments

- Project „Centre for Sustainable Management of Minerals and Energy is currently being implemented by MEERI PAS and co-financed from the Regional Operational Programme of the Małopolska Province 2014-2020 (EU Funds), with total cost of over 27 milion PLN
- Until April 2023, new MEERI PAS laboratory and office building will be constructed in Kraków, together with 3 new Laboratories and development of 2 existing Laboratories (including Geothermal Laboratory in Bańska Nizna – Podhale region)
- In Geothermal Laboratory, new BTES heat storage will be constructed, powered by heat from solar collectors and own geothermal hole, and existing research stand for geothermal water treatment will be developed



Future new MEERI PAS building in
Kraków



Future look of MEERI PAS Geothermal Laboratory
in Bańska Nizna, Podhale region



Thank you for your attention



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