Iceland Liechtenstein Norway grants

Norway grants

IGSMiE PAN

Mineral and Energy Economy Research Institute Polish Academy of Sciences (MEERI PAS) Kraków, Poland

Krzysztof Galos
Mineral and Energy Economy Research Institute
Polish Academy of Science

User4GeoEnergy kick-off meeting
2nd December 2020

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 profile

FIELDS OF RESEARCH AND DEVELOPMENTS EXPERTISE:

THE SCOPE OF SCIENTIFIC RESEARCH:

MEERI PAS organisation structure

DEPARTMENT OF STRATEGIC POLICY AND RESEARCH	• Division of Strategic Research • Division of Energy Economics • Division of Sustainable Development of Minerals and Energy
DEPARTMENT OF MINERALS AND ENERGY MARKET RESEARCH	• 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	• 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	• Division of Renewable Energy Sources • Division of Environmental Studies and Waste Management • Division of Structural Analyses and Geological Cartography

MEERI PAS employment structure

Employee group	Number
Professors	10
Associate professors (DSc)	15
Doctors (PhD)	31
Assistants (MSc)	34
Others	20
TOTAL	110

MEERI PAS R&D activities

COOPERATION AND SOURCES OF REVENUES:

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 (including domestic projects financed by EU)

Type of the project	Number of projects
5th EU Framework Programme	5
6th EU Framework Programme	7
7th 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)

The most important MEERI PAS achievements in Renewable Energy Sources area

- Design and constructing the Poland's first experimental geothermal plant Bańska - Biały Dunajec,
- 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,
- Elaboration the guidelines to improve the injectivity of reservoir rocks while injecting geothermal waters in 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 (direct use of geothermal systems), the optimal management of geothermal waters to obtain heat and electricity in selected area of Podhale,
- Elaboration an atlas of geothermal waters for the combined electricity and heat generation applying binary systems in Poland,
- Effective use of geothermal water and energy, ex. for heating, balneotherapy, wood drying, agriculture, fish farming and drinking water production on the basis of cooled geothermal water (using membrane processes),
- Demonstrating of cascade use of geothermal energy.

The most important international projects related to geothermal energy and waters use with MEERI PAS as participant

- CLENSYS – Cleaner Energy Systems through Utilization of Renewable Energy Resources (2002-2003, 5FP);
- IGET – Integrated Geophysical Methods for Exploration of Deep Geothermal Systems (2005-2009, 6FP);
- GTR-H – Geothermal Regulations – Heat (Altener, 2006 – 2009)
- GEOCOM – Geothermal Communities: Demonstrating the Cascading Use of Geothermal Energy for District Heating with Small Scale RES Integration and Retrofitting Measures (2010 – 2014, 7 FP)
- GeoDH – Promote Geothermal District Heating in Europe (IEE, 2012-2014)
- EEA Geothermal Projects in Poland - supported by EEA Financial Mechanism (2016-2017)
- EUBILD-UNAKLIM – European Educational Concept in Environmental- Nature- and Climate-Protection to Safegueard Cross-Border Sustainable Development (2016-2019)
- GEORISK – Development of projects related to geothermal Energy and other renewable Energy sources by reducing their risk (2018-2021, Horizon2020)
- Geo4Food – Water-Energy-Food Nexus: Geothermal water for agriculture (2019-2022, Polish-Turkish Cooperation Programme)
- Next 3 projects supported by EEA Financial Mechanism – just starting!

The most recent domestic projects related to geothermal energy and waters use with MEERI PAS as leader or participant

- **Obtaining of drinking water and liquids and balneological substances in the treatment of cooled thermal waters.** NCBiR PBS3 Project No. 245079, Project consortium: MEERI PAS (project leader), AGH UST and 4 others, 2014 – 2017
- **Use of geothermal waters for combined production of electricity and heat using binary systems in Poland.** Research project ordered by Ministry of Environment. Project consortium: MEERI PAS (project leader), PIG-PIB, AGH UST, 2011 – 2014
- **Evaluation of potential, thermal balance and prospective geological structures for needs of Enhanced Geothermal System in Poland.** Research project ordered by Ministry of Environment. Project consortium: PIG-PIB (project leader), MEERI PAS, AGH UST, PBG Ltd, 2010 – 2013
- **Develop design guidelines to improve absorption of reservoir rocks in connection with the injection of thermal waters in the Polish geothermal plants.** Research Project ordered by Ministry of Environment. Project consortium: Geotermia Mazowiecka (project leader), MEERI PAS, 2009-2011
- **Analysis of possible use of geothermal waters of the Carpathian Foredeep for balneotherapy and recreation and heating purposes.** KBN research & development project No. 0474/R/T02/2009/06. Project consortium: AGH UST (project leader), PIG-PIB, UJ, MEERI PAS, Geofizyka Kraków Ltd., PGNiG S.A., 2009–2012

Developments of MEERI PAS

- Project entitled „Centre for Sustaiable 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 Niżna – Podhale region)
- In Geothermal Laboratory, new BTES heat storage will be constructed, powerede 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 Niżna, Podhale region

Thank you for your attention

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Krzysztof Galos – Director of the Institute

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