



postminquake.eu



European  
Commission



Research Fund for Coal & Steel



# Short overview of the project



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# Formal Data

## RFCS PostMinQuake Project

„Induced earthquake and rock mass movements in coal post mining areas: mechanisms, hazard and risk assessment”

Grant Agreement No: 899192

**RFCS Research Objective:** Coal 3 ‘Efficient Protection of the Environment and improvement of the use of coal as a clean energy source’

**Priority 3:** ‘Addressing occupational health and safety or environmental risks during or after coal mine or coal power plant operation’

**Duration of the action:** 36 months (extended to 39 months)

**Starting date:** 1 September 2020

**Total Cost:** 2,722,577.75€

**Grant Requested:** 1,633,546.65€

# Project Partners



Central Mining Institute  
(GIG)  
Poland



Technische  
Hochschule  
Georg Agricola

Technische Hochschule  
Goerg Agricola (THGA)  
Germany



Institute of Geonics AS CR  
(IGN)  
Czech Republic



Bureau de Recherches  
Géologiques et Minières  
France



Spółka Restrukturyzacji  
Kopalń (SRK)  
Poland



INERIS

*maîtriser le risque  
pour un développement durable*

INERIS  
France



Green Gas DPB, Inc.  
(GG)  
Czech Republic



DIAMO, s.p.  
Czech Republic



Silesian University of  
Technology (SUT)  
Poland



GFZ

Helmholtz Centre  
POTSDAM

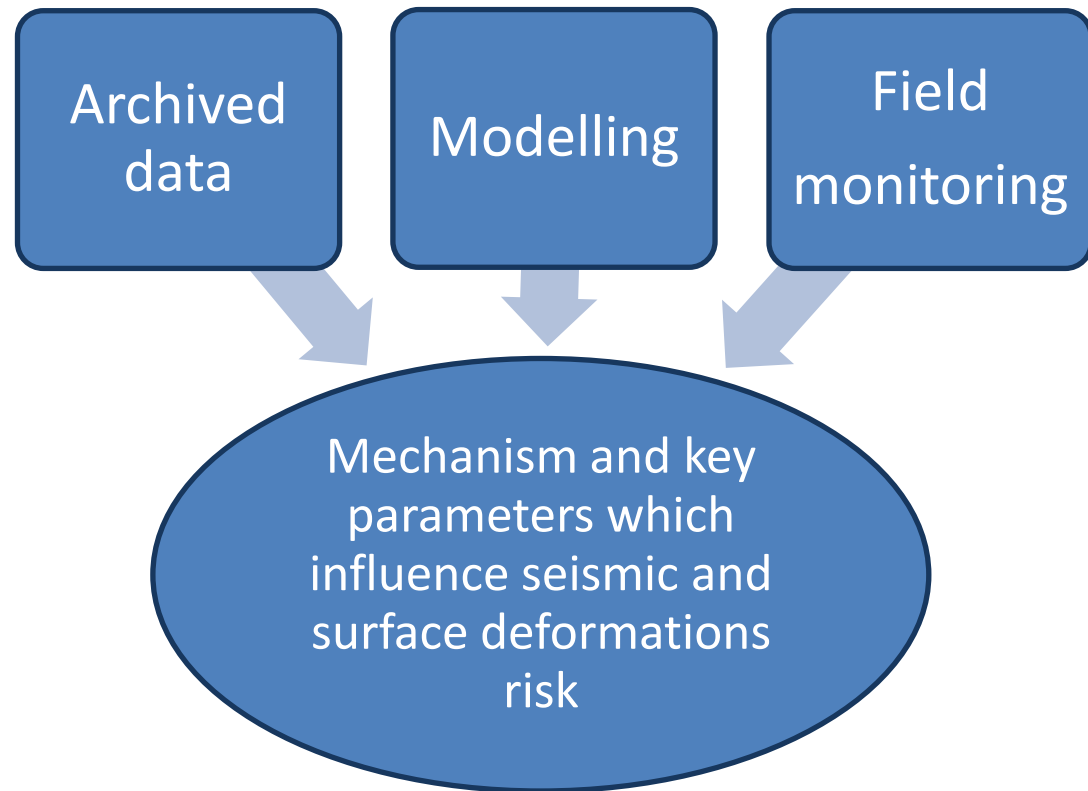
Helmholtz Centre Potsdam  
(GFZ)  
Germany

## Socio-economic aspects

- For years, mining areas in Europe were among the most industrialized, since they had rich coal deposits.
- Economic activity involving coal exploitation is the source of a series of disadvantageous environmental changes. More importantly, they can occur both simultaneously with the operation of mines and many years after their completion.
- The closure of the mine is the last stage of mining activity. The most common and cheapest method of mine liquidation is to stop drainage and to flood all its underground workings.
- **The PostMinQuake project concerns the evaluation of the effect of the mine flooding process on the seismic and surface deformation hazard increase in the post-mining areas in Europe.**

# General concept

The main idea of the project was to collect and analyze data sets from chosen post-mining areas where both surface deformations and seismic events have been observed since the mines were closed.



## The project particularly aimed to:

- Analyze the experiences of European countries with coal mining legacy (Czech Republic, France, Germany, Poland) using the same tools and methodology in order to formulate mechanisms and reasons of seismicity and surface deformation.
- Establish the relationship between seismic events or surface deformations and the process of mine flooding.
- Examine and choose update methods and plans for long term monitoring of post-mining areas in order to mitigate seismic risk during and after coal mines closure.
- Formulate international criteria of dealing with post-mining threats which manifest in seismic events.
- Disseminate the knowledge and help the mining regions to develop their economic and social activities.

## Structure of project and workflow of tasks

WP1	• Coordination and project management
WP2	• Data collection and analysis
WP3	• Hydro-mechanical Modelling
WP4	• Digital platform of integrated data
WP5	• Seismic hazard and risk assessment - environmental and management aspects
WP6	• Monitoring strategies
WP7	• Valorisation and dissemination of the results

## Description of project tasks

**WP1:** Coordination and project management.

**WP2:** Elaboration of a data-base on well documented case studies of post-mining districts known by the partners of the project.

**WP3:** Modelling of the rock mass mechanical and structural response for the water loads during flooding. Validation of models.

**WP4:** Development of a digital platform on post-mining areas in Europe prone to seismicity and rock mass movements during and after flooding. Elaboration of a methodology of integrated study to evaluate the post-mining earthquake hazard.

**WP5:** Hazard and vulnerability assessment: Elaboration of criteria of hazard rating.

**WP6:** Monitoring strategies for areas with high hazard.

**WP7:** Dissemination of the main results through different tools and media, that increase the role of the Europe to manage the abandoned coal mines.

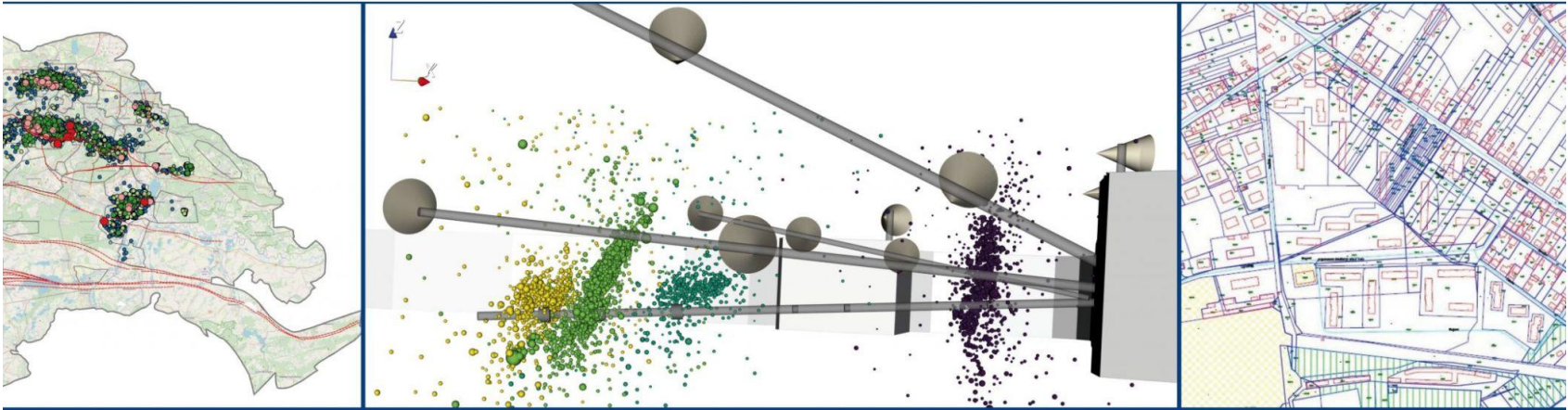


# Dissemination of project results (website)

WORKSHOP PRESENTING THE FINAL RESULTS OF POSTMINQUAKE PROJECT



HOME RESEARCH ▾ FIELD SITES ▾ DPID DISSEMINATION PARTNERS CONTACT PARTNERS' AREA

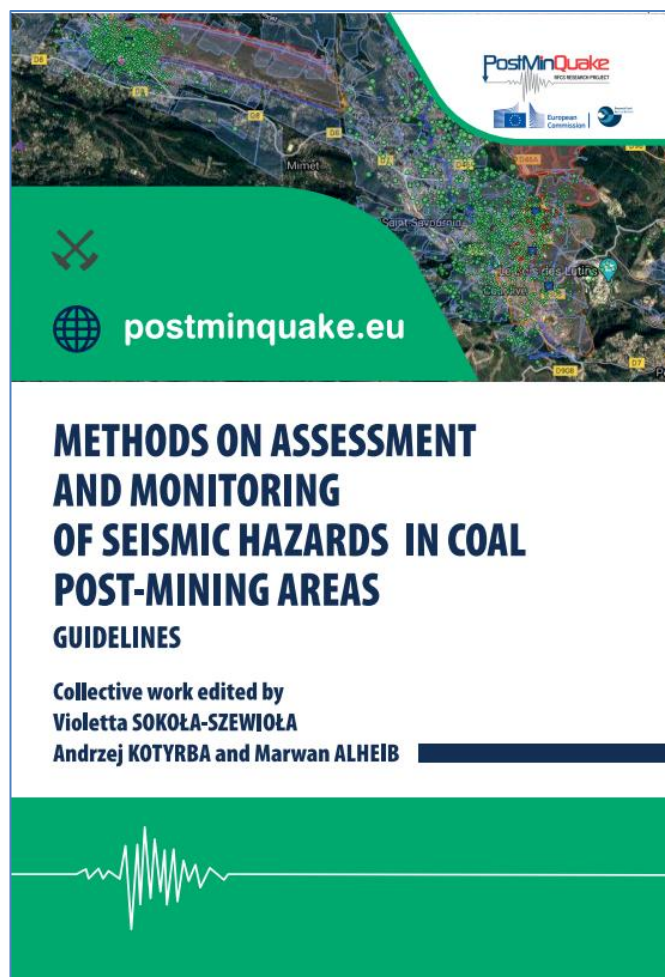


## PostMinQuake

**Project realized within the framework of Research Fund for Coal and Steel (RFCS)**

The management of the post mining regions in Europe is an important issue for the safety and economic reasons. The PostMinQuake – Induced earthquake and rock mass movements in coal post mining areas: mechanisms, hazard and risk assessment – treats the most important hazards related to unexpected ground motions which may affect the surface stability, vulnerable structures and critical infrastructures. The goal of the project is to deepen the knowledge of post-mining seismic events as well as surface deformations in European countries with coal mining legacy.

## Dissemination of project results (guidelines in form of book)



## Dissemination of project results (publications, presentations etc.)

- Scientific publications: 17
  - Conference presentations: 25
  - Other (press publications and notes: 5
- (<https://postminquake.eu/dissemination>)

## Research infrastructure for monitoring created at Kazimierz-Juliusz test site and beneficiaries

- Local seismological network at Kazimierz-Juliusz site (3 geosig stations -triaxial geophones) - beneficiary GIG
- 1 telemetric and automatic station measuring water table in carboniferous strata (1 hour data MPG1) - beneficiary GIG
- 2 telemetric and automatic stations measuring water table in quaternary strata (1 second data) - beneficiary GIG
- 42 geodetic benchmarks for periodic gravity surveys – beneficiary GIG
- 3 GNSS stations – beneficiary SUT
- 1 deep piezometer P-Kazimierz-Juliusz (depth 650 m) - beneficiary SRK



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# Thank you

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