# Use of the European Geological Data Infrastructure for safeguarding Europe's groundwater resources and dependent ecosystems

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GeoERA GROUNDWATER

## Introduction

Changes in the quantity and quality of groundwater and water in the hydrological cycle in general have important implications for the evolution of water resources, the built environment, and terrestrial and aquatic ecosystems, globally.

It is the mission of the four GeoERA groundwater projects studying aspects of **groundwater quantity and quality** issues related to natural processes and human activities to provide groundwater **quantity** and **quality data** for the European Geological Data Infrastructure (EGDI) and develop this as a **leading information platform** for groundwater data in Europe and one of the leading platforms, globally.

**Sound groundwater data is a prerequisite for sustainable management and protection of subsurface water resources for present and future generations.**

The four groundwater projects providing data for EGDI are:

**HOVER**
**RESOURCE**
**TACTIC**
**VoGERA**

## HOVER

*Hydrogeological processes and geological settings over Europe controlling dissolved geogenic and anthropogenic elements in groundwater of relevance to human health and the status of dependent ecosystems*

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**Vision**

The project will address groundwater management issues related to drinking water, human and ecosystem health across Europe in relation to both geogenic elements and anthropogenic pollutants by data sharing, technical and scientific exchange between European GSOs.

**Main tasks**

- Evaluating health risks and spatial variability of concentrations of geogenic elements assessing thermal and mineral water
- Increase understanding of ecology and microbial diversity controls on transforming pollutants at groundwater-surface water transition zones
- Quantify groundwater age distributions and nitrate and pesticide travel times and pollution trends
- Develop harmonized aquifer vulnerability maps
- Develop common standards, databases and maps

## RESOURCE

*Resources of groundwater, harmonized at cross-border and Pan-European Scale*

**Vision**

A coherent overview of all fresh groundwater over Europe is not available for policy development and evaluation. The RESOURCE project aims at demonstrating the potentials of the harmonization of information about Europe's groundwater resources.

**Main tasks**

Good practices for harmonized data and information across borders for assessments of:

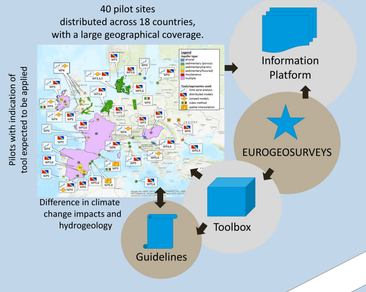
- 3D structure of aquifers
- water volumes available
- water fluxes and water quality
- Cross-border demonstrations projects
- Pan-European map of the fresh groundwater resources

## TACTIC

*Tools for assessment of climate change impact on groundwater and adaptation strategies*

**Vision**

The vision and mission of TACTIC is to improve the use and access to data and knowledge of the subsurface system acquired by the Geological Survey Organisations (GSO) in Europe for the use in climate change impact assessments and adaptation.




**Main tasks**

- Develop toolbox and guidelines
- Application and demonstration of tools in climate assessment pilots
- Making pilot results accessible via the GeoERA website and Information Platform (EGDI)

## VoGERA

*Vulnerability of shallow groundwater resources to deep sub-surface energy-related activities*

**Vision**

The project will consider the possible impacts on groundwater from a range of sub-surface energy activities (geothermal energy, unconventional oil and gas exploitation, sub-surface storage and disposal of wastes)


**Main tasks**

- Development of conceptual models of shallow groundwater vulnerability to deep sub-surface energy activities
- Investigations into contamination pathways at four case study sites
- Development of a tool for use by decision makers to assess shallow groundwater vulnerability

## FAIR data

Findable, Accesssible, Interoperable and Reusable

The four projects will deliver "FAIR" data - https://www.go-fair.org/fair-principles/ following EU Horizon 2020 guidelines via the European Geological Data Infrastructure (EGDI) and the GeoERA website (see links below). The websites provide easy access to data visualization and download. **FAIR data will improve our understanding of the subsurface and support common efforts to develop sustainable and geoethical uses of the subsurface based on geoscientific data and principles.**

Visit GeoERA and the four groundwater projects at: https://geoera.eu

GeoERA Information Platform / European Geological Data Infrastructure (EGDI) at: http://www.europe-geology.eu/