

EGU23-15481. The future Pan-European Atlas for Sustainable **Geo-Energy Capacities.** The GSEU project

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1. Introduction

Through a five-year Coordination and Support Action, the new **GSEU (Geological Service for Europe)** project, EuroGeoSurveys, and 48 partner organizations from 35 European countries (including both national and regional Geological Survey Organizations - GSO, and associated partners) will deliver a plan for a sustainable Geological Service for Europe to be implemented at the 2027 project serving European society through, and beyond, the green transition. The project supports the vision of European Green Deal, focusing on our Earth and what lies within its subsurface, i.e., water, energy, raw materials, and all areas that require subsurface data and expertise. The GSEU's key objective is to develop and make permanently available pan-European geological data on the already existing European Geological Data Infrastructure (EGDI) and related information services for the sustainable and safe use of our subsurface and its resources (Fig.1).

Project Objectives

- 1) To develop pan-European harmonized data and information services in Europe with a focus on:
 - Critical raw materials
 - Geothermal energy resources and subsurface storage capacities for sustainable energy carriers and CO2 sequestration
 - Groundwater dynamics and quality, geological and climate change information for coastal vulnerability assessment and geological baseline information
- 2) To establish the European Centre of Excellence on Sustainable Resource Management to promote the deployment of the United Nations Framework Classification for Resources (UNFC);
- 3) To develop the geological data infrastructure building on the existing <u>EGDI</u> to provide permanent access to and dissemination of the data and information services developed under the project and beyond, targeting a wide range of stakeholders, with the specific aim of enabling further innovation and strengthening the market uptake of innovative solutions;
- 4) To provide a common European Geological Knowledge Base Platform as the single open access portal to the project results and to the underlying data and information collections and infrastructures of partners at national and regional level;
- 5) To further strengthen the network of national and regional geological survey organizations to provide geological knowledge and services in a sustainable manner.



Fig. 1. Structure of the GSEU (Geological Service for Europe) based on scientific WPs developing harmonized data information, a EGDI web-based GIS platform to deliver the services and the Communication, dissemination, exploitation & outreach activities.



2. Geothermal energy & underground storage inventory

The 'WP3 Geothermal energy & underground storage inventory' will deliver the named online GIS 'Pan-European Atlas for Sustainable Geo-Energy Capacities (SGEC)', a future harmonized and generalized distribution of maps and databases of already known assessed capacity and resource potential, mainly from previous European projects (Fig.2), and supported with additional national and regional information provided by the different the geological survey organizations.

Materials and methods

The 'Pan-European Atlas for Sustainable Geo-Energy Capacities (SGEC)' will address the following GeoENERGY topics:

- Geothermal energy (from shallow to medium-deep and deep-ultra deep resources)
- Subsurface storage capacities for permanent and temporal sustainable energy carriers (CO₂, H₂, compressed air, heat and cool - UTES)

The project will develop harmonized GIS data sets including standardized qualitative and quantitative attributes using a common methodology defined by the experts (Fig.3) together with other information such as guidelines and metadata that will be available throughout the period of execution of the project at a national and regional scale.

3. Results and dissemination

The future 'Pan-European Atlas for Sustainable Geo-Energy Capacities (SGEC)' will be delivered in a structured way trough EGDI platform (Fig.4) https://www.europegeology.eu/, the EuroGeoSurveys' (EGS) European Geological Data Infrastructure. This provides access to Pan-European and national geological datasets and services from the Geological Survey Organizations of Europe. EGDI is a central element in EGS' ambition about establishing a Geological Service for Europe.



Fig. 4 Concept for the future pan-European atlas of sustainable GeoENERGY capacities, containing datasets, guidelines and metadata accessible via the European Geological Data Infrastructure (EGDI) web platform.



3D

GeoEnergy

Resources

Fig. 3 Organized Thematic Working Groups (TWG) of specialists will work on the definition of methodologies, their implementation and the collaborative construction of the content of the Pan-EU ATLAS of Sustainable GeoEnergy Capacities.



EGU23-15481 https://doi.org/10.5194/egusphere-egu23-15481 EGU General Assembly 2023 © Author(s) 2023. This work is distributed under the Creative Commons Attribution 4.0 License

References



Fig. 2 Examples of distribution of maps and databases of already known assessed capacity and resource potentials from previous European projects, among them CO2Stop, ESTMAP, GeoDH, GeoELEC, etc.



GSEU (Geological Service for Europe, 2023) website. https://www.geologicalservice.eu/

GSEU website

