

## EuroGeoSurveys feedback on the GreenData4All Initiative

### Introduction

Achieving the energy transition and the Green Deal depend on FAIR data for the sustainable use of the subsurface and its contained resources: critical raw materials, geothermal energy, space for storage of hydrogen, compressed air and other sustainable energy carriers, CO<sub>2</sub> or nuclear waste; as well as analysis, monitoring, modelling, and management of soils, groundwater, and geohazards (land subsidence, landslides, earthquakes, coastal zone instability, drought, and flood) considering the 'Do No Significant Harm' principle. Data, information, and knowledge of the subsurface are indispensable to achieve Europe's net zero goals and the UN Sustainable Development Goals. [EuroGeoSurveys](#) – and our vision of a future sustainable Geological Service for Europe – enables sustainable and responsible use of our subsurface resources through provision of harmonized pan-European subsurface (geoscientific) data, information, and knowledge.

EuroGeoSurveys is a not-for-profit association, established in 1971, providing vital subsurface knowledge to support the EU's competitiveness, social well-being, environmental management, and international commitments. EuroGeoSurveys coordinates a network of 37 Geological Surveys of Europe, a workforce of more than 10,000, collaborating through ten scientific expert groups and two task forces. We address European issues in the field of geoscience (science of the subsurface) and collaborate on projects that inform EU and national policy for the benefit of all European citizens. EuroGeoSurveys welcomes the 'GreenData4All' Initiative as a positive action toward improving the EU data landscape.

The INSPIRE Directive has implemented several technical rules by setting up an interoperability framework for spatial data that is important and that is a reference for many other domains. However, some of this has proven difficult to adopt. We welcome the intent to improve the rules on environmental data sharing and promote participation in the Green Deal Data Space. We also welcome the intent to expand the legislative scope to increase focus on "data describing the state of the environment and pressures on the environment," an area where we see that increased consideration of subsurface data is crucial, increasing relevance of INSPIRE to environmental policy development and implementation. For this reason, we propose the following suggestions for improving the dialogue of the entire digital data landscape.

## Recommendations

- Subsurface (geological) data is crucial in assessing, monitoring, and managing the environment for climate change mitigation and adaptation, and meeting the EU's net zero ambitions. Planned legislative changes should aim to bring greater alignment between subsurface and other environmental data systems, maximising the impact of existing systems such as the [European Geological Data Infrastructure](#), delivered by [EuroGeoSurveys](#) and the [Geological Service for Europe](#).
- There are inconsistencies between what is proposed in different legislative Acts. For example, the Open Data Directive promotes use of Linked Open Data, also useful for building knowledge platforms. However, this is not foreseen in the INSPIRE Directive. Inconsistency can lead to difficulties in decision-making and implementation. It is important that the technical differences between different Acts are reduced.
- Near real-time monitoring activities are becoming increasingly important and sophisticated due to the possibility of using low-cost distributed online sensors and drone observations, for example. At the same time, the Open Data Directive requires dynamic data to be available as soon as possible. These competing situations require us to review the model with which data can be exchanged to be compliant. Also, because technology is evolving, it is important that legislation takes into account that this data must be native so that it can be processed quickly.
- Regarding sensors, it is important to note that recently, the main direct or indirect producers of data and geographic information are application users (citizens) and private companies. These entities update data more frequently than public administrations, which means that, in addition to technological neutrality, synergies are also needed for data quality control purposes. Hence, data quality assessment and assurance protocols also need to be developed in public-private partnership.
- Thanks to the environmental digital twin and digital twins in Earth science in general, updated baseline information and (for natural hazard scenarios) updated information on natural events (e.g., earthquakes, landslides, precipitation, floods, land subsidence – especially in urban or urbanised environments), will be crucial in building the unified Green Data Space necessary in the future. Such environmental (including Earth science) data will support processing of simulations and automated mitigation and adaptation actions based on near real-time monitoring and model projection results to efficiently respond to geohazards and increase societal resilience to climate change impacts.
- To limit the creation or replication of data spaces, legislation should encourage the reuse of already existing thematic systems (e.g., the [European Geological Data Infrastructure](#)) and improve the links between major surface and subsurface data spaces, information platforms and map viewers, illustrating the intricate links between surface and subsurface resources, society and nature, in the resources-society-nature nexus.



The Geological Surveys of Europe

