EGEC views on the European initiative on the use of Galileo in Critical Infrastructures Inception Impact Assessment consultation

10 June 2020

EGEC, the voice of the European geothermal industry, is a not-for-profit association representing the entire value-chain of the industry across 28 countries. It is included on the European Transparency Register number: 11458103335-07 Further information can be found at www.egec.org.

We support the introduction of the European Global Navigation Satellite Navigation Systems (Galileo and EGNOS) in the critical infrastructures that depend on satellite navigation for timing and synchronisation within the European Union.

We welcome the opportunity to respond to the Inception Impact Assessment (IIA) on the European initiative on the use of Galileo in Critical Infrastructures. Our recommendations are:

- **Satellite-based synchronisation of smart electricity and smart thermal grids**
  
The future of our current energy is moving towards the smart sector integration, where the integration of combined technologies using renewable energy sources reduces the environmental impact and offers citizens a better quality of live. Geothermal has a particularly important role in smart electricity and thermal grids, since it can deliver both heating and cooling and electricity.
  
  Digitalisation would allow the development of these smart energy systems. These digitalised systems are intelligently planned and operated, and enable the end-user to interact with the heating and cooling system. With digital elements, they are integrated in the whole urban energy system from a spatial point of view (related to urban planning parameters and processes), and from an energy system point of view (e.g. optimising the interfaces to other urban networks – electricity, sewage, waste, Information & Communication Technologies-ICT, etc).

- **Enhancing the technology of remote sensing for geothermal resource mapping**
  
  As elaborated in the Strategic Research and Innovation Agenda of ETIP DG, satellite surface thermal data and multispectral imaging have been successfully applied to mapping geothermal resources. For example, spectral analysis of aeromagnetic data has been used to calculate thermal heat fluxes, whereas gravimetric data has proven useful in locating fault zones which are prospects for further geothermal exploration. These concrete examples show that remote sensing, in combination with targeted ground observations, are successful in providing an efficient way to locate and quantify currently unknown geothermal resources.
  
  Unfortunately, the use of remote sensing in geothermal resource mapping is hampered by data resolution, the lack of a robust algorithm to extract non-geothermal components from the imagery and a limited depth of earth observation data.
However, the combination of different geophysical datasets and data mining have the potential to develop reliable algorithms for characterising deep and ultra-hot geothermal resources.

Therefore, it is essential to:
• Identify and test remote sensing imagery that can act as a proxy for deep geothermal processes (e.g. near-surface/soil gas concentrations, analyses of multi-spectral imagery, aeromagnetic data, gravimetry)
• Combine techniques to locate hot-spot areas at large depths
• Acquire geophysical datasets for known geothermal fields to be used for machine learning

*Association of global earth observation data with COPERNICUS GEO*
An accurate environmental monitoring cannot be achieved by remote sensing technologies alone. It needs to be improved with the EU Copernicus GEO programme that will allow to collect relevant data to cover observation gaps, calibrate and validate remote-sensing data and deliver better Earth Observation services. This should be done by taking advantage of new technologies (for example by using low energy sensors and communications systems).

The earth observation data should also be shared and easily accessible, especially for research and innovation establishments.

We strongly encourage the European Commission to include the above-mentioned recommendations when elaborating the European Global Navigation Satellite Navigation Systems (Galileo and EGNOS)

**Contact:**
Reghina Dimitrisina
Policy Officer
r.dimitrisina@egec.org