GEO-ENERGY TEST BEDS FOR LOW CARBON ENERGY

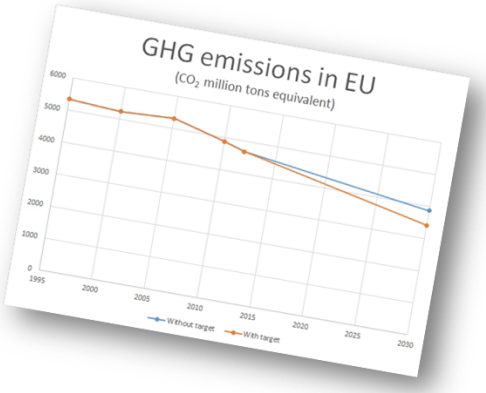
OVERVIEW

The technologies required to play a part in greenhouse gas emissions reductions from power generation have similar geological and environmental issues (containment, deep reservoirs, sustainability) and we will need high levels of safe and thorough subsurface management, and assurance of environmental security, to realise the potential of these energy sources in densely populated countries.

Geo Energy Test Beds are experimental test and monitoring facilities to understand the subsurface processes that make environmental sustainability possible. They will underpin the design of management systems for the subsurface and the development of robust regulation.

The GeoEnergy Test Bed TCS will allow online discovery and publication of monitoring data through combined IT systems and delivery across European GeoEnergy Test Beds. This will encourage transparency and improve public interest and support which, in turn, will build trust in the process and resulting science. In the long term European GeoEnergy Test Beds will help to bring about a new energy system in Europe.

The first task of the GeoEnergy Test Bed TCS is to bring together key European subsurface facilities and laboratories to work alongside other EPOS TCS, to create an efficient and comprehensive multidisciplinary research platform for the Earth sciences in Europe.



OBJECTIVES

Facilitate the integrated use of data, models and facilities, across geoenergy domains

Provide access to observation, modelling and experimental facilities

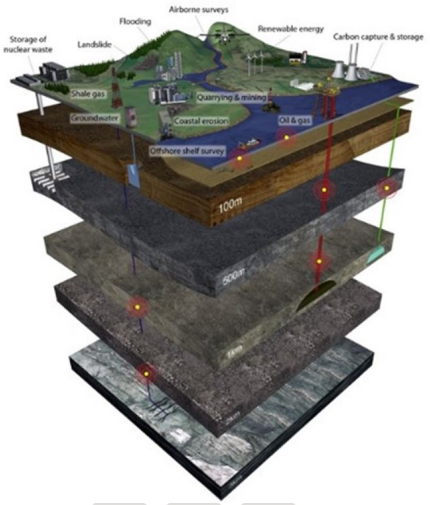
Integrate data, models and facilities from dedicated GeoEnergy Test Beds with existing monitoring facilities not necessarily dedicated to energy development

Promote an integrated approach to planning the next generation of research facilities for geo-energies

Online publication of monitoring data to encourage transparency and to improve public buy-in and trust

Provide the scientific basis on which systems to sustainably manage subsurface geoenergy resources can be designed, and robust regulations can be developed

Help to bring about a new energy system in Europe



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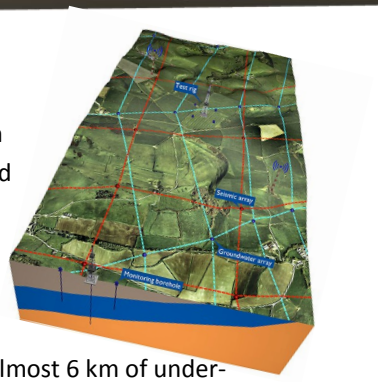
SERVICES



UKGO will establish a series of new subsurface energy test centres and laboratories based in the UK and focussed on developing new subsurface energy technologies, and monitoring and observing the effects that subsurface energy technologies have on the environment.

The **Josef Regional Underground Research Centre (URC)** comprises almost 6 km of underground tunnels and galleries, based in a former gold mine. The mission of the URC is:

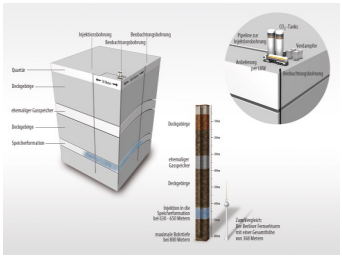
a. Technological development and innovation focused on new technologies, competitive products and services in the field of underground structures

b. Rapid transfer of research results towards practical applications

c. Training and re-qualification of workers in underground structures

d. Marketing, expert services and accredited testing

The **Skalka Mine, CZ** **is** an extracted iron-ore mine near Mníšek pod Brdy that has been largely inactive since extraction ceased in 1966. It is less developed than Josef, but larger, with 12 km of passages. It is currently being used for a geothermal experiment in which rocks are being assessed for their ability to act as heat exchangers for local heating systems.



Ketzin, DE CCS pilot site, 25 km west of Berlin, national and European projects coordinated by the German Research Centre for Geosciences (Deutsches GeoForschungsZentrum GFZ) are dedicated to advancing our scientific understanding of how to geologically store CO2, and the processes of subsurface CO2 injection and migration, by:

Deutsches GeoForschungsZentrum (GFZ) geothermal research platform, Groß Schönebeck, is situated northeast of Berlin on the southern edge of the North German Basin. In 2001, the abandoned Groß Schönebeck (E GrSk E3/90) gas exploration well was reopened by GFZ Potsdam, and deepened to 4300 m with the intention of using the well for geothermal research. A second well (Gt GrSk4/05) was drilled in 2006 in order to establish a geothermal (extraction and injection) doublet. The wells give access to low permeability water-bearing horizons at depths between 3.9 and 4.4 km at temperatures of 150°C, i.e. hot enough to operate steam turbines and generate power. They are used as an in situ laboratory for investigating deep sedimentary structures and fluids under natural conditions. Research activities take holistic approach along the whole chain of geothermal technologies, from the geothermal reservoir to the provision of power, heat and chill.

The downhole laboratory represents an important pilot project for the development of geothermal technology in Europe. In situ experiments and borehole measurements can be performed to improve the productivity of low-permeability geothermal reservoirs to create Enhanced Geothermal Systems (EGS). The research platform also includes facilities for testing plant components and materials.

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