

# Joint Efforts to Strengthen Geothermal Energy

**Geothermal heat is a promising source to enrich and significantly contribute to the renewable energy mix in a long-term perspective. To foster the use of geothermal energy in a secure, clean and efficient way, the European Commission (EC) supports eleven projects within the Horizon 2020 Programme (H2020) and pursues one of the 7<sup>th</sup> Framework Programme (FP7). This brings together almost 20 countries and numerous stakeholders, providing a wide range of knowledge and expertise.**

Geothermal energy offers a sheer infinite resource for heat extracted from the underground, providing a constant and reliable supply combined with low carbon emissions. To exploit the full potential of geothermal energy for heating and cooling, as well as for generating electricity, the EU is funding several research and demonstration projects. In 2014, the electricity generated from renewable sources in the EU accounted for 27.5%<sup>1</sup> with a share of 3.2% from geothermal energy<sup>2</sup>.

The H2020 and FP7 projects on geothermal energy address different challenges and research areas. The focus lies on the development, improvement and demonstration of technologies for shallow and deep geothermal energy exploitation, with the emphasis on safety, sustainable responsibility and cost optimisation.

One important field of innovation is the drilling technology used to extract geothermal energy, as it can account up to half of the total expenses required to fund a geothermal project. The projects known as **GEOTech**, **ThermoDrill** and **IMAGE** work on novel drilling technologies to improve the reliability of geothermal systems, facilitate their handling, enhance the rate of penetration and simplify the accuracy when locating new exploration wells. An emphasis on high temperature and pressure conditions is set by **DESCRAMBLE**, who will demonstrate safe drilling based on best practices from oil and gas production. All these developments help to substantially reduce costs and minimize undesirable side-effects. **Cheap-GSHPS** aims to reach these goals in the context of shallow geothermal systems and simultaneously raise awareness for geothermal energy technology throughout Europe.

Another core area is the performance of wells, addressed by the projects GeoWell and SURE. Whereas **GeoWell** focusses on technologies optimised to complete and monitor high temperature geothermal wells, **SURE** investigates how to increase the performance of geothermal wells, with a higher degree of control, and a lower environmental impact compared to conventional stimulation technologies.

Other innovations are evolved by CHPM2030 and MATCHING. **CHPM2030** aims to develop a novel and potentially disruptive technology solution, helping to satisfy the European need for energy and strategic metals in a single interlinked process. Meanwhile, **MATCHING** focuses on the reduction of cooling water demand in the energy sector. This is assessed as essential, and strives through innovative technological solutions, to be demonstrated in thermal and geothermal power plants.

The testing of such innovations and the publication of the results are an elementary success factor for future projects. **EoCoE** investigates a case study for the use of geothermal energy for city quarters by high-performance computing simulations providing guidelines how geothermal energy may be incorporated in the future energy mix. **DESTRESS**, **DEEPEGS** and **GEMex** will examine advanced technologies at several demonstration sites with different geological settings. Furthermore, a collection of good practices will assemble the outcomes for public use.

The EU funding phase of the geothermal projects is four years and will end in 2020. The results are expected to bring a substantial contribution to the promotion of geothermal energy in Europe and beyond.

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<sup>1</sup> <http://ec.europa.eu/eurostat/tgm/table.do?tab=table&init=1&language=en&pcode=tsdcc330&plugin=1>

<sup>2</sup> [http://ec.europa.eu/research/energy/eu/index\\_en.cfm?pg=research-geothermal-background](http://ec.europa.eu/research/energy/eu/index_en.cfm?pg=research-geothermal-background)