
INTRODUCTION

Geothermal energy is widely known for its reliable, weather-independent and renewable nature, which is commonly used in many countries all over the world for power generation purposes and direct heat applications as well. At the same time, it generates significant socio-economic and environmental benefits when compared to other energy sources. Geothermal energy originates from the lithosphere and is efficiently transported by fluids of multiple kinds circulating within the Earth's crust. Though geothermal energy (the heat of the Earth) is present everywhere in the crust, its most common methods of exploitation are limited to a relatively few sites where the heat carrier (i.e. geothermal fluid) is easy and cheap to access, has high enthalpy (specific energy) and is of great abundance – and even at these sites geothermal production has its share of technical and environmental bottlenecks. It is these issues that the Geothermal Communities project addressed, which, co-funded under FP7 was set out to demonstrate best available technologies in the use of geothermal energy. In addition to the demonstration element, the GeoCom project contained also a strong complementary component of research. Although current Hungarian legislation allows the surface disposal of used thermal water, reinjection is an excellent solution to avoid above-ground pollution and,

in many cases the only way to maintain reservoir pressure. In turn, reinjection is among the highest risk-factors for geothermal operators. Scale formation and/or other precipitations and organic separations can occur in the area of the reinjection, impairing well-structure and formation-integrity. The studies published hereinafter give a comprehensive view of geothermal energy utilization for stakeholders and all those interested in the geothermal potential of Hungary and Central-Eastern Europe, with a focus on the research and development activities dedicated to the environmentally sound injection of thermal water. We hope to meet the needs of geothermal experts looking for reference in specific aspects of geothermal energy utilization as well as the more general public interested in getting a more general insight into what's up to date in geothermal. For this reason we start out with the definition of basic concepts of hydrogeology and arrive at the state of the art in geothermal, specifically at the new technologies of injection into sandstone reservoirs. We hope that a book of this kind will appeal to a wide audience and will most certainly be useful for students of practical hydrogeology.

The Editors