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Research on Utilization of Geo-Energy

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The world's energy demand will increase year by year and we have to search for alternative energy resources. New concepts concerning the energy production from geo-resources have to be provided and developed. The joint project GeoEn combines research on the four core themes geothermal energy, shale gas, CO_2 capture and CO_2 storage. Sustainable energy production from deep geothermal energy resources is addressed including all processes related to geothermal technologies, from reservoir exploitation to energy conversion in the power plant. The research on the unconventional natural gas resource, shale gas, is focussed on the sedimentological, diagenetic and compositional characteristics of gas shales. Technologies and solutions for the prevention of the greenhouse gas carbon dioxide are developed in the research fields CO_2 capture technologies, utilization, transport, and CO_2 storage. Those four core themes are studied with an integrated approach using the synergy of cross-cutting methodologies. New exploration and reservoir technologies and innovative monitoring methods, e.g. CSMT (controlled-source magnetotellurics) are examined and developed. All disciplines are complemented by numerical simulations of the relevant processes.

A particular strength of the project is the availability of large experimental infrastructures where the respective technologies are tested and monitored. These include the power plant Schwarze Pumpe, where the Oxyfuel process is improved, the pilot storage site for CO_2 in Ketzin and the geothermal research platform Groß Schönebeck, with two deep wells and an experimental plant overground for research on corrosion.

In addition to fundamental research, the acceptance of new technologies, especially in the field of CCS is examined. Another focus addressed is the impact of shale gas production on the environment. A further important goal is the education of young scientists in the new field "geo-energy" to fight skills shortage in this field of growing economic and ecologic relevance.