



Investigations of the shale gas potential in NE Germany

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European shale gas exploration is still in its infancy, although the first ideas to search for this unconventional gas resource were published in the 1980s. Today, many companies have included this topic in their research programs and actively explore for shale gas in Europe.

Until now, only the US has achieved commercial production of shale gas.

The search for shale gas in Europe may apply exploration concepts from the US shale gas experience. However, it is difficult to transfer a single genetic model of productive shale gas plays in the US to potential European systems. Black shales with a wide range of maturities occur in almost all European Phanerozoic formations and include potential for shale gas. Currently, the Helmholtz Centre Potsdam GFZ, the German Research Centre for Geosciences, is investigating black shales in the north-east German basin for their shale gas potential.

The north-east German Basin contains in excess of 10-12 km of Lower Palaeozoic, Upper Palaeozoic, Mesozoic and Cenozoic strata. Our investigations are being carried out on black shales of Silurian, Lower and Upper Carboniferous, and Lower Jurassic age.

Existing data about degassing experiments have shown that e.g. the released gas from early Westphalian sediments can be completely composed of methane. However, nitrogen can be the dominant gas component in younger and older sediments. According to this, one key element of our investigations are sediments of early Westphalian age. After compilation of existing data (TOC contents, maturity, gas contents, etc.), several wells have been sampled for the aforementioned horizons. One focus of our investigations is the mineralogy and diagenesis of the sediments to evaluate their geomechanical properties for potential frac jobs. Furthermore, the organic material is being investigated for TOC contents, organic matter type, and maturity by microscopic and organic geochemical procedures. Moreover, gas contents and composition by desorption experiments at different temperatures are being determined. The results of these investigations will be coupled with further basin modelling and geomechanical investigations to finally evaluate the shale gas potential and the potential for economic extraction.