

SHALE GAS – A POSSIBLE GAME CHANGER IN THE GLOBAL ENERGY MIX

In the United States, hydraulic fracturing, a recently developed method of shale gas procurement, has the potential to flip the country from a net importer of natural gas to a net exporter. Shale gas now accounts for one quarter of all U.S. gas production, and the Energy Information Administration (EIA) forecasts that this proportion will double by 2035.

In Europe, production levels from unconventional gas sources including shale could range from 60 billion cubic metres (bcm), less than half of current shale gas production in North America, to 200 bcm by 2025.

Shale is soft, finely stratified sedimentary rock that formed from consolidated mud or clay. Hydraulic fracturing is the process of creating small cracks, or fractures, in underground rock formations as much as 7,700 metres below ground level to extract gas (and oil) from shale. Once a potential site has been chosen, a hole is drilled deep into the ground vertically and then horizontally. A liquid mixture including large amounts of water, chemicals and sand is then pumped into the well. The liquid goes into the holes created in the well bore and into the surrounding rock formations, fracking the rock and injecting the liquid into the cracks to hold them open. Water pressure is reduced and fluids are carried up the wellbore for disposal or treatment and re-use, leaving sand in place to keep the cracks open and let gas flow up to the surface.

ECONOMIC VIABILITY

According to research from the University of Pittsburgh, use of hydraulic fracking to extract shale gas is extremely expensive. Drilling just a single shale gas well can add \$2.5 million to the overall total cost for a conventional well of up to \$7.6 million on average, according to the research.

In Europe, shale gas would compete with conventional sources of gas supplies and liquefied natural gas (LNG) imports, and many analysts predict shale extraction will remain too expensive in Europe to compete with these sources.

ENVIRONMENTAL IMPACT

Environmentalists in the United States say potential water contamination caused by fracking is a major cause for concern. Chemical-laced fracking fluid can seep through rock fissures into local water wells, and escaping methane from poorly cemented wells and fluid can spill into local rivers and streams, they say. Fracking requires the treatment of fluids that flow back to the surface after the process is complete. U.S. companies now reuse much of the returned fluid, but they need a large water treatment capacity to return the liquid to an acceptable grade.