

Summary of the Energy Watch Group analysis

Fracking: Interim Review

March 2015

Author: Dr .Werner Zittel,
Ludwig Bölkow Systemtechnik GmbH, Ottobrunn/Germany

© Energy Watch Group / Ludwig-Boelkow-Stiftung
www.energywatchgroup.org

The first part of this study reviews the subsidies in the US shale gas industry. The study aims to provide an overview of the achievements and the problems, caused by the intense hydraulic fracturing of oil and gas wells in the United States of America – the only country so far to have experienced both the successes and problems on a commercially relevant scale.

In the second part, the situation in Europe and Germany in particular is discussed. So far, no shale gas reserves have been unlocked here by fracking. Yet, in spring 2015 a policy framework on fracking will be established both in Germany and at the European level. Depending on the assessment of the potential and risks, the framework will either allow or prohibit an industrial engagement. This special situation demands a socially acceptable decision, compatible with climate policy, and justifies taking stock of the situation so far.

The third part addresses the question, why fracking has been carried out so intensely and successfully in the US over the past ten years. It argues that the conditions in the United States were unique and that due to specific differences, these activities cannot be transferred with similar success to Germany and Central Europe. An engagement will presumably be even counterproductive in terms of meeting the German federal government's climate protection goals.

Until now fracking of shale gas reserves and light oil in dense rocks, so-called "light tight oil" or LTO, has been conducted on a commercially relevant scale most notably in the USA. The country has extensive experience in using the technology.

In 2005, a law was adopted, which exempted industrial drilling from having to legally prove that groundwater is free from contamination. Right after that the fracking boom reached an unprecedented scale. Within 10 years the share of shale gas in the total US gas production increased from less than three per cent to over 40 per cent. During this period over a hundred thousand new wells were sunk, which were often fracked several times within a few years. Despite the limited and rapidly decreasing extraction from individual wells, the total extraction rate could be significantly expanded in a very short time.

With the collapse in natural gas prices in the summer of 2008, the revenues from the extracted gas could no longer cover the expenditures for new investments, operating plants, covering running costs and anticipated returns. New loans had to be taken and previously acquired drilling and land rights had to be sold. The fall in crude oil prices since autumn 2014 and the financial depreciation of the oil and gas reserves securing these investments have exposed their speculative nature. Since then, many companies have been struggling to survive financially. As a result, this has delayed the development of the reserves and has reduced investments. Oil and gas extraction in the US will therefore

soon see a decline in production, which will be hard to curb due to the specific extraction characteristics.

With the significant shale gas and LTO extraction rates from hydraulically fractured wells over several years a high price was paid with regional environmental damage, irreversible water consumption and the transformation of rural areas into industrial-like landscapes. The decision of the New York state to ban hydraulic fracturing in December 2014 caused prolonged public debates and analyses of the risks.

In Europe the exploitation of shale gas reserves is still in its early stage. So far the focus has been largely on creating a legal framework and on analysing the potential reserves in terms of their commercial viability. The US Energy Information Administration published highly inflated analyses of the fracking potential, particularly in Poland, most likely with the aim of enticing development within the country. In fact Poland did award generous drilling licences. This procurement practice has already led to discrepancies with the European Commission as a result of suspected violations of the European law.

The results of the initial drilling activities, where international companies were also involved, were disappointing. For instance, ExxonMobil, Talisman, Marathon Oil and Chevron withdrew their activities in Poland. Following the caused damage, public opposition keeps hindering fracking activities. In Romania and the Ukraine, the drilling results also fell short of the expectations. As a result, Shell and Chevron also withdrew from these countries.

France, Bulgaria, the Czech Republic, Scotland and the Netherlands have either legally banned fracking or temporarily prohibited it by imposing moratorium. The European Commission has also adopted a recommendation for minimum principles for issuing drilling licenses. Thus, a minimum distance to built-up areas and aquifers must be maintained, and public participation is required as part of strategic environmental assessment before licences can be issued.

In Germany, a fracking-law should be adopted in the coming weeks and months. The law will permit fracking in some areas subject to specific conditions, will completely prohibit it in other areas, and will largely permit it below a depth of 3,000 metres. If the majority of a six-member panel gives their consent, in individual cases drilling licences in accordance with water law can also be issued above the 3000-metre limit for exploratory purposes. In addition, new regulations will be allowed in a few years to expedite the commercial development.

The current draft bill already reveals discrepancies with the recommendations of the European Commission, which will certainly lead to revisions. For example,

there is no obligation to strategically review projects in terms of the cumulative effects, and there is no stipulation of minimum distance to exclusion areas (e.g. residential or water protection areas).

In the regions, where fracking is banned, concerns about the environmental risks and other drawbacks outweigh the potential contribution that the production could make to the energy provision. In the regions, where exploration activities are permitted and supported by the state, hopes for a significant contribution by future shale gas production are given greater weight.

An analysis of the experience in the US shows that the local production success is tied to specific characteristics that do not exist in Europe and probably hardly exist in any other country. It is an illusion to hope that the production successes achieved there can also be attained in Europe. For example, during the 150-year-old commercial history of oil and gas production in the USA, a broad economic basis has been established which is supported by thousands of small and large companies as well as by a broadly developed supply industry and infrastructure. Many thousands of new wells are sunk each year with over a thousand active drilling rigs. The extremely low population density in the core areas reduces the potential for competing uses in rural areas. The potential for civil protest is also lower, although in recent years it became increasingly vocal and led to local fracking bans outside of New York. Prerequisites specific to the USA, which enable companies to acquire drilling rights, loans or other capital injections, have facilitated the rapid development activities.

None of these conditions exist in Germany in a similar form. There are no correspondingly promising deposits as in the USA. The infrastructure conditions are not comparable: in Europe other industries act as backbone of economic activity. The more intensive use of space and the higher population density quickly lead to local protests and do not allow low-cost drilling comparable with the USA, whereby even the drilling costs are no longer covered by the sales proceeds. Given the high site development costs, fugitive losses (with considerable leakages of climate-relevant gases) and the frequently low yields from hydraulically fractured wells, there are serious doubts, whether these activities are at all compatible with the European and German climate policies.

After all, the aim is to reduce greenhouse gas emissions within the next 35 years by 80 to 95 per cent over 1990 levels or by 75 to 93 per cent compared with current levels. Against this background, it seems counterproductive to favour a technology the commercial production of which will begin in a few years at the earliest. Given its presumably minor economic importance in Germany and considerable potential for conflict, preference to fracking over other economic and social interests cannot be justified.