

Shale gas: recovering a mirage?

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A report posted online on April 7 by [Le Figaro](#) assesses the gains that could be expected from the exploitation of shale gas in France: the report concludes that this is an opportunity to revive the French economy and cut France's energy costs by substituting domestic production for our imports of gas. It estimates that the macroeconomic impact would be substantial: in the "likely" scenario, more than 200,000 jobs would be created, with an additional 1.7 points of GDP on average over a 30-year period.

The magnitude of these figures stems directly from the assumptions used in the report, especially in terms of geology. The production costs for a shale gas field and the volumes that could be extracted depend on the field's physical characteristics (depth, permeability, ductility of the rock, etc.). However, without carrying out any experimental fracking, it is very difficult to make a future estimate of all of these parameters, and hence of the final production cost.

It is nevertheless possible to see how these parameters are distributed in the only territory that has extensively exploited shale gas up to now: the United States. By reviewing the production data for the US deposits accumulated over more than ten years, a realistic distribution of production costs can be modelled. This is the approach adopted to develop the SHERPA model, which is described in an OFCE working paper published today, [Can the U.S. shale revolution be duplicated in Europe?](#)

More than 60 shale gas deposits have been explored in the

United States since it first began to be exploited in the early 2000s. But only 30 have been put into commercial production, and six of these account for over 90% of the total US output of shale gas. Based on the geological assumptions corresponding to the median of the six best deposits, the Net Present Value (NPV) of France's gas resources comes to 15 billion euros – 15 times less than the 224 billion estimated in the aforementioned report. To reach this latter figure, it must be assumed both that the cost of drilling and well completion will be similar in France and the United States, and that the French deposits are comparable to the best American field, around Haynesville, Louisiana ... but the characteristics of that field are exceptional: the average output of its gas wells is nearly four times the average of the five other main deposits. While it is of course impossible *a priori* to exclude that this latter assumption would hold, it is very unlikely.

This uncertainty emphasizes the need to carry out experimental drilling to guard against overly optimistic scenarios. The case of Poland is instructive: the projections of the US Energy Information Agency (EIA) pointed to very large shale gas reserves in a country that is heavily dependent on imports of Russian gas. The Polish government, keen to strengthen its energy independence, decided to try to speed up domestic production, offering up to a third of its territory for operating concessions. The first wells were disappointing: it turned out that the rocks in the Polish deposit contained too much clay, making them too ductile and impeding good fracturing of the rock – an essential step for exploiting shale gas, regardless of which technology is used. After the trials, Poland's substantial reserves, touted as the largest in Europe, proved to be unworkable.

This kind of evaluation should be made in a way that is public and transparent. Professional prospectors, whose main activity is to assess the geological reality of a hydrocarbon deposit

previously estimated on paper, in fact have an interest in overestimating the pre-drilling assessments in order to sell their services. An example from abroad once again shows the extent of the problem: in May 2014, the US EIA reported that the estimate of the exploitable volume of shale oil in the US Monterey deposit, hitherto regarded as one of the most promising, was being slashed by 96%. After a review, it was clear that the first estimate, made two years earlier, had been based entirely on the calculations of private independent prospectors, without the intervention of the governmental services of the US Geological Survey.

To ensure a realistic assessment of France's resources of shale gas, experimental drilling needs to be entrusted to a public body, with fully transparent results and methodology. Only an approach like this can ensure that future scenarios are objective and not unduly optimistic.