

# How should fracking research be funded?

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## Abstract

The use of hydraulic fracturing ('fracking') to extract oil or gas from shales is a subject of controversy. There are many scientific questions about the risks associated with the technique, and much research remains to be done. ReFINE (Researching Fracking In Europe) is a research consortium led by Newcastle University and Durham University in the UK, focusing on the environmental impacts of shale gas and oil exploitation using fracking methods. The project was established to answer questions raised by members of the public across Europe on the risks of fracking. It aims to inform the debate surrounding fracking by undertaking scientific research, which will be peer-reviewed and openly accessible. This case study discusses the structure of ReFINE and the issues associated with using funding from oil and gas companies to support the research.

## Keywords

fracking, hydraulic fracturing, oil companies, research funding, shale gas

The use of hydraulic fracturing ('fracking') to extract oil or gas from shales – fine-grained sedimentary rocks – is a subject of controversy. There are many scientific questions about the risks associated with the technique, and much research remains to be done. Funding this research can raise ethical issues, however.

ReFINE (Researching Fracking In Europe) is a research consortium led by Newcastle University and Durham University in the UK, focusing on the environmental impacts of shale gas and shale oil exploitation using fracking methods. The project was conceived in 2011 to answer questions raised by members of the public across Europe on the risks of fracking, and the consortium was launched in November 2013. It aims to inform the debate surrounding fracking by undertaking scientific research, which will be peer-reviewed and openly accessible.

Funding for ReFINE has come from a range of organisations. These include NERC (the Natural Environment Research Council, a UK government research council), the Environment Agency (the national environmental regulator for England), and the energy companies Chevron, Shell, Total, GDF Suez, Centrica, and Ineos, all of whom wish to exploit shale resources. The project has a standard management committee, which includes all the funders as well as advisory stakeholders, such as the British Geological Survey, the Royal Society of Chemistry, the Geological Society of London, the Bulgarian Geological Society and the UK Government's Department of Energy and Climate Change (DECC).

Ethical review of the project was carried out by Durham University Science Faculty ethics committee in 2012, and by Newcastle University's Faculty of Science, Agriculture and Engineering ethics committee in 2015. A number of measures were adopted before the consortium was launched. Firstly, an Independent Science Board (ISB) was put in place. This is the most senior level of governance for the ReFINE project, and is made up of academics from Europe and the USA with a range of expertise in fracking. It is the responsibility of the ISB to ensure that research relevant to the public interest and free from industry bias.

Secondly, it was agreed that all researchers joining the ReFINE project would have to declare any potential conflicts of interest (e.g. shares, directorships or existing/previous industry funding for research projects). An annual census is carried out to check that these records are up to date.

The research carried out by the project is submitted to peer-reviewed journals, and the contract signed by the funders stipulates that this research is independent. The researchers control the content of the research, the data they use to carry out the research (which might be provided by stakeholders in the project), and when and where it is published. All peer-reviewed ReFINE papers are made freely available through green or gold open access.

Funders receive access to the submitted research papers 45 days before they are published online. The companies can point out factual errors or ambiguities in the research by completing a pro forma. They are informed that this is made accessible to members of the public upon request, as is all other ReFINE correspondence and data.

In April 2014, the first peer-reviewed paper to be published by ReFINE researchers after the official launch concluded that leakage from a small percentage of boreholes used for fracking was a potential environmental risk. In June 2014, a second peer-reviewed paper examined the naturally occurring radioactive material in fracking flowback fluids, concluding that the radioactivity of such fluids was unlikely to pose a risk to human health.

In June 2014, shortly after publication of the paper showing that a small percentage of boreholes drilled for fracking might leak, Total took what they referred to as a 'management decision' to withdraw from the consortium and funding it. No more information on the reasons for the withdrawal was provided; it is not known if it was linked to the publication of the well integrity paper.

Questions for discussion:

1. How should independent research into fracking be funded?
2. Should the funding of fracking research be regarded as any different from that of other controversial areas of applied science?
3. Are the safeguards in place within the ReFINE project structure suitable or could more be done?
4. Should researchers within the project use company datasets to carry out new research if the data can be independently validated?
5. Should funders be permitted to make comments on factual accuracy as outlined above?
6. How should members of the Independent Science Board be nominated and approved?

## **Funding**

This research was carried out by members of the ReFINE project ([www.refine.org.uk](http://www.refine.org.uk)), different phases of which have been funded by NERC, Chevron, Shell, Total, GDF Suez, Centrica, Ineos, and the Environment Agency.