

# Predicting fracking policy

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Hydraulic fracturing is emerging as one of the primary methods of drilling for natural gas, yet is equally controversial in its potential to induce harm to humans and the environment. The uncertainties of the health risks associated with horizontal drilling using fluid pressure to break down shale formations for natural gas extraction has pushed countries worldwide to proactively regulate the use of this technology, such as a temporary ban in Germany in 2012 and a ban in France in 2011. Where such decisions are hedged on a variety of metrics ranging from social resistance to the technology to potential economic benefits to concerns for environmental health, it is difficult to predict how a country may move to regulate this technology without a formal tool to review all decision criteria and policy alternatives. For companies seeking to engage in hydraulic fracturing activities, understanding how a country will regulate its domestic drilling industry is a crucial element for the company to decide whether to invest the time, money, and manpower necessary to begin the complex shale drilling operations.

In an article in *Environmental Sciences Europe*, Igor Linkov of the US Army Engineer Research and Development Center in Concord, MA and colleagues discuss the importance of predicting how countries move to regulate their domestic hydraulic fracturing industries in the midst of uncertain risks and benefits. Specifically, they present a formal model of multi-criteria decision analysis to demonstrate how companies and other organizations can assess various sources of qualitative and subjective information on hydraulic fracturing to estimate how a given country will ultimately decide to regulate such drilling processes within their borders.

Multi-criteria decision analysis (MCDA) is a method for decision structuring that permits the use of both quantitative and qualitative data sources with high uncertainty or subjectivity. It improves upon unstandardized, ad hoc decision making by formally modeling the decision process at hand, and includes the various decision criteria and policy alternatives that may be chosen by the decision maker. Ultimately, MCDA helps aggregate the impact of various unrelated inputs into a ranked list of quantitative results in a transparent process.

The importance of being able to predict future action by governments centers on the significant investment required by [hydraulic fracturing](#) companies in order to make drill sites economically viable. As such, these companies are intrinsically required to make an assessment of whether or not to drill within a given country before they have potentially passed a final regulatory assessment of such drilling behavior. If companies find themselves stuck within those countries that limit or ban future fracking activity, the companies would suffer substantial potential losses in projected economic income and various elements of immobile infrastructure at drill sites.

Using fictional data with archetypal countries, we demonstrate how multi-criteria decision analysis can fill the predictive gap for such companies' and organizations' needs. This decision analytic framework can account for various social, economic, environmental, and political factors that influence each nation's decision making, and use them to assess the various types of policy alternatives that could potentially be adopted. Such a tool is versatile and can include a variety of other inputs and information on an individual country basis, and ultimately serves as a formal and transparent method to predict where they fall on fracking's regulatory scale.

**More information:** Linkov, I. et al (2014). A decision-analytic approach to predict state regulation of hydraulic fracturing,

*Environmental Sciences Europe*. [DOI: 10.1186/s12302-014-0020-7](https://doi.org/10.1186/s12302-014-0020-7).

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