



Hydraulic Fracturing – Scientific Foundations and Public Perception

Data Types:

Geology, production, groundwater geochemistry, political-economic gains and losses

Challenge Details: Hydraulic fracturing (HF) is a well-completion method that involves injecting into a subsurface formation a slurry of water mixed with proppant material (usually sand) and other additives such as surfactants. HF fluids are pumped at high pressures that are sufficient to create tensile opening fractures in a subsurface reservoir, thus increasing the permeability.

Although HF technology has been in commercial use for decades, the widespread deployment of massive multi-stage HF for development of low-permeability hydrocarbon resources has proliferated in recent years in the U.S., and Canada.

This technology, in combination with long-reach horizontal drilling, has had a game-changing global economic impact, but has also led to major public backlash as symbolized by negative connotations ascribed by the general public to the term “fracking”. For instance, the east coast Mi'kmaq Community has expressed concern that this technique contravenes their cultural responsibility as custodians of the lands and waters.

The purpose of this **Challenge** is to conduct a thorough and balanced examination of the environmental, social and economic implications of unconventional extraction methods using information that is unbiased and scientifically sound.

As part of this work, the source of data and the conditions under which it was collected should be critically examined.

Questions:

- (1) Is the negative public perception and opposition to hydraulic fracturing seen in many jurisdictions based on science?
- (2) Who are the main players in this debate?
- (3) What are new innovations in unconventional drilling in a range of environments?
- (4) What are the top 10 risks and benefits?

THINK  TANK



Student Name	Discipline	University	Level
German Rodriguez-Pradilla	Geoscience	Calgary	PhD
Leah Wilson	Geoscience	Calgary	MSc
Linh Tran	Economics	Calgary	MA
Henry Zhou	Engineering	Toronto	MASc
Cici Zhong	Engineering	Toronto	PhD