

DRILLING DEEPER

Impacts of Hydraulic Fracturing and Related Grantmaking Strategies

Hydraulic fracturing, commonly referred to as fracking, is a process used in natural gas and oil drilling. New technology now allows drilling from previously inaccessible and unconventional sources, particularly shale. This has led to a surge in U.S. natural gas operations that already has had significant economic, social, environmental and health impacts.

Natural gas is being championed by industry as a cleaner and more affordable fuel than oil or coal, and one that can meet U.S. energy needs for decades. Proponents say fracking creates jobs, promotes energy independence and can transition the country into a green energy future. At the same time, critics condemn natural gas production as a dirty process that can contaminate air and water sources, lead to a boom and bust economy, contribute to climate change and inhibit the development of cleaner technologies.

Both positions hold substantial implications for the health and well-being of people and the planet. Grantmakers are uniquely placed to help shed light on complexities surrounding hydraulic fracturing and natural gas development, and to better inform policy, practices and public opinion regarding related health, social and environmental issues.

Drilling Deeper is a report designed to help grantmakers understand this complex issue and to provide an overview of funding priorities and challenges. It is divided into two parts: Hydraulic Fracturing Impacts and Funding Strategies.

Hydraulic Fracturing Impacts

This section defines the processes used in drilling, examines existing regulations concerning the practice, and outlines concerns about impacts on the environment, communities and health.

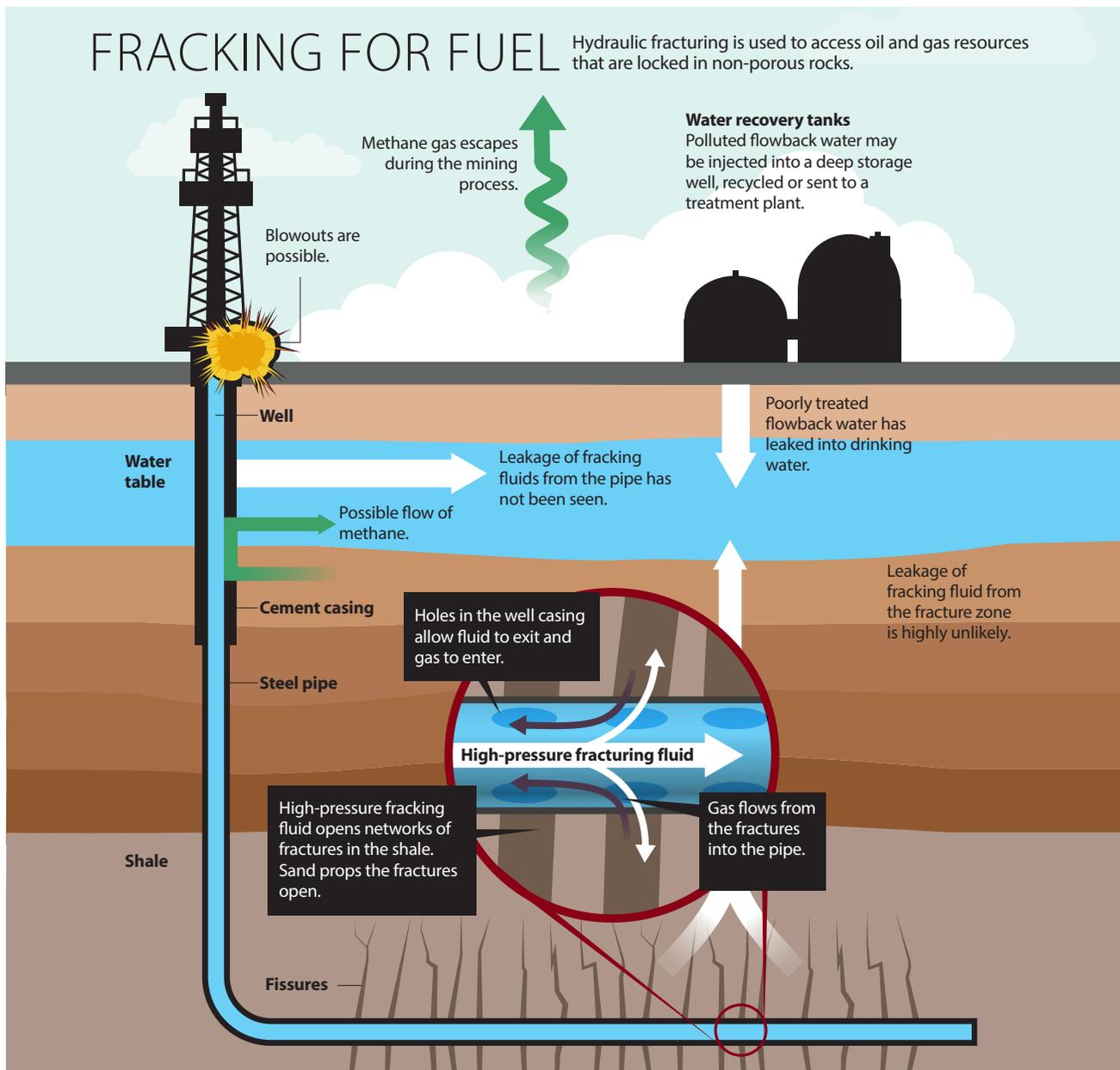
Environmental Impacts

Water contamination from toxic wastewater is at the heart of the controversy over fracking. Each fracking event uses millions of gallons of water, which are mixed with toxic chemicals and must be transported, stored, treated and disposed of, with contamination potential at every stage of this process. Natural gas operations also release air emissions that may adversely affect air quality and health (see Figure 1). Contaminated water and air have led to concerns about impacts on agricultural crops, livestock and wildlife.

There are many questions about how fracking and increased production of natural gas will impact climate change. Much debate focuses on the extent and impact of methane emissions. Methane is a destructive greenhouse gas that can trap heat at 23 times the rate of carbon dioxide; natural gas production and distribution produces more methane than does coal or oil. Some researchers estimate that methane emissions related to fracking have the potential to make natural gas one-fifth to twice as bad as coal from a climate change standpoint. Others believe that tightening methane emissions, combined with natural gas' cleaner combustion, would make gas a more climate-friendly option than coal or oil and a bridge fuel while renewable energy develops. Still others point out that natural gas' lifecycle emissions of carbon dioxide still increase net carbon emissions, and they raise concerns that shifts towards gas will delay transitions to zero carbon technologies.

Figure 1: Fracking impacts on air and water

Contamination of air and water from fracking operations



Source: Nature

Community Impacts

Natural gas development has stimulated the U.S. economy in the form of increased employment and tax revenues to communities. Yet many communities which have experienced increased drilling activity also report negative “boom-bust” economic fallout, including inflation, uneven economic benefit and costs and temporary influxes of outside workers rather than permanent local job expansion. Other adverse community impacts reported include increased homelessness, crime, drugs and sexually transmitted diseases.

The impact of tens of thousands of trucks and tankers on local roads has led to extensive road damage, a surge in traffic accidents and increased traffic noise and pollution. Expanded tax revenue is being weighed against increased strains on local services from permitting and roads maintenance to police, hospitals and schools.

The oil and gas industry has won exemptions from many federal environmental and health regulations such as the Clean Water Act and Safe Drinking Water Act, shifting the focus of regulation to states. Legal responses vary greatly from

state to state raising, legal and political questions about the ability of residents and local communities to decide whether or where drilling may take place. Heightening concerns about citizen voice and good governance are the millions of dollars spent by the natural gas industry in lobbying and contributions to political campaigns, as well as weak state laws around industry chemicals disclosure or accountability in cases of adverse impacts.

Health Impacts

The fracking process uses many hazardous chemicals that could negatively affect the skin, eyes and other sensory organs, along with the respiratory, nervous, gastrointestinal, endocrine, immune and cardiovascular systems. Fracking wastewater also picks up naturally occurring radioactive materials underground; such materials have been shown to cause liver, bone and breast cancers.

Human exposure comes primarily through the air and water. Water contamination is most likely to happen from wastewater transportation and disposal, well casing leaks or surface spills. Air pollution from venting gases or diesel truck traffic to and from drill sites release a significant amount of contaminants linked to asthma and other respiratory diseases. Children are particularly vulnerable to environmental hazards like toxic chemicals and air pollution, according to medical experts.

Funding Strategies

This section is based on interviews and feedback from dozens of foundations and NGOs on what they see as challenges, opportunities and priorities that funders might consider.

Challenges and Opportunities for Grantmakers

Funders and advocates surveyed indicated that key challenges to addressing impacts from fracking include: lack of coordination among hundreds of recently formed grassroots groups; exclusion from federal regulation that leaves few traditional legal options to address issues on a national scale; and substantial oil and gas industry investment in political contributions, public relations and lobbying.

Grantmakers and NGOs identified three opportunities: the wide range of issue areas related to fracking offer many entry points for funder and advocate engagement; there is high visibility and public awareness on which to build momentum for change; and initial research on the health, environmental and social impacts of fracking has helped identify needs for more research.

Priorities

Respondents suggest prioritizing:

Coordination and movement building. Outreach, training and support may help increase the effectiveness of local groups, especially those new to advocacy and with limited capacity. Some recommend linking local, regional, state and national groups to help mobilize constituents and political pressure.

Research. More accurate information and baseline studies could allow for evaluation of long-term cumulative effects on the health, environmental, social and economic impacts of fracking.

Communications. Strategies to improve communications and shared messaging could increase media attention and national impact, building on the success of social media campaigns and the documentary *Gasland* in raising awareness.

Legal and policy strategies. Many interviewed considered regulatory reform critical to reducing negative impacts and risks of fracking and related industrial activity.

Immediate needs and crisis intervention. In states experiencing immediate impacts, such as illness, loss of drinking water, dying livestock, homelessness and overburdened social services, action to expand options and resources for local communities could help alleviate or mitigate concerns.

Strategies

Most grantmakers approach this issue through a geographic or issue focus, often through strategies that might include a mix of public education and advocacy, research and monitoring, media and communications, or policy and legislation.

In states with existing natural gas fracking operations, grantmakers are funding NGO activity to assess and mitigate current impacts such as providing medical assistance, doing community-based health assessments or air monitoring. Funders have also been supporting research on impacts, educational resources for affected communities and policy advocacy.

Several grantmakers and NGOs in states with planned or potential fracking operations have focused on legislative and regulatory efforts to set standards before fracking is allowed in the state. Some support bans or moratoriums and activities to build public awareness and engagement in decision-making.

Responses have varied depending on whether one is focused at the state or national level. Much state and local activity has focused on building public education and advocacy efforts, applying public pressure and legal challenges targeting state regulatory agencies. Funder support for national

Figure 2: Lower 48 states shale plays
Distribution of U.S. oil and gas shales



Source: U.S. Energy Information Administration

groups has resulted in projects such as model legislation or shareholder initiatives which may serve as templates nationwide. Both national and local groups have been quick to utilize social media to build awareness.

Grantmakers surveyed for this report repeatedly identified the need for regional collaboration strategies as natural gas shales often cover several states and watersheds (see Figure 2). There also is strong interest in collaboration within philanthropy, given the multifaceted nature of the issues and far-reaching implications for funder interests

including in climate and energy, water, environmental health, social justice, civic participation, agriculture and food, public health and transportation.

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For more information, please visit www.HEFN.org.



The Health and Environmental Funders Network (HEFN) is a network of grantmakers investing at the intersections of health and the environment. HEFN's mission is to maximize the impact of philanthropy on environmental health and environmental justice.