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# The Right Way to Develop Shale Gas

By MICHAEL R. BLOOMBERG and FRED KRUPP APRIL 29, 2014

LISTENING to the polarized energy debate in the United States, you might think natural gas was an economic and geopolitical cure-all — or an environmental curse. Too many oil and gas executives behave as if this newly abundant resource, released from underground shale deposits by the combination of horizontal drilling and hydraulic fracturing, has no environmental challenges. Opponents often act as if it has no economic and environmental benefits.

So here's a reality check. The shale gas boom is indeed lowering energy costs, creating new jobs, boosting domestic manufacturing and delivering some measurable environmental benefits as well. Unlike coal, natural gas produces minuscule amounts of such toxic air pollutants as sulfur dioxide and mercury when burned — so the transition from coal- to natural-gas-fired electricity generation is improving overall air quality, which improves public health. There's also a potential climate benefit, since natural-gas-fired plants emit roughly half the carbon dioxide of coal-fired ones.

At the same time, opposition to shale gas development is driven by

very real instances of localized air and groundwater pollution. Because of intensive shale-gas development, the small town of Pinedale, Wyo., has experienced smog concentrations comparable to those of Los Angeles. The industry asserts that hydraulic fracturing does not contaminate water supplies when fluids are shot at high pressure into shale deposits to release gas. But inspection records in several states show that mistakes or accidents in other phases of the process — poor well construction or surface spills, for example — have done so.

These environmental concerns are having a major impact on public opinion. A poll by the Pew Research Center last fall found that 49 percent of those surveyed opposed the increased use of hydraulic fracturing, while 44 percent supported it. These views are leading communities and even states to keep out the industry. In 2010, New York, one of four states sitting atop an estimated 141 trillion cubic feet of recoverable natural gas in the Marcellus Shale formation, became the first state to impose a moratorium on hydraulic fracturing. Last year in Colorado, four cities voted to prohibit it. If opponents have their way, a statewide measure restricting the process will be on the Colorado ballot this fall.

There's also a growing awareness today of another serious problem with natural gas development: methane emissions, which can undo the potential climate benefit of natural gas. Though it burns cleaner than coal, uncombusted natural gas is mostly methane, a greenhouse gas 84 times more potent than carbon dioxide in the first 20 years after it is released. Estimates vary widely about how much methane is being leaked or vented during the production and transportation of natural gas, but there is no doubt that methane emissions need to be measured and reduced.

This is essentially a data acquisition and management problem — the kind that we know we can solve. For instance, after New York City's health department installed 150 air-quality monitors throughout the city in 2008, a startling fact emerged: Dirty heating oil caused more soot pollution than all the cars and trucks in the city combined. The resulting Clean Heat program helped drive down sulfur dioxide pollution by nearly 70 percent

and soot levels by almost 25 percent by helping the worst polluting buildings switch to cleaner fuels.

The same data-driven approach can reduce air and water pollution from shale gas drilling, by requiring operators and regulators to identify and correct hot spots. We have the technology to do this. But we can't manage what we don't measure.

Strong rules and enforcement are critical. And, as one of us, Fred Krupp, describes in the current issue of Foreign Affairs, states are beginning to take action. Texas has imposed tough standards for well integrity, a key to groundwater protection. Wyoming has set strong requirements for water testing before drilling begins. Ohio is emerging as a leader in reducing air pollution from leaky oil and gas equipment. And in February, Colorado became the first state to directly regulate methane emissions from oil and gas operations — a huge step forward.

After Gov. John Hickenlooper declared “zero tolerance” for methane, three of Colorado's largest oil and gas producers worked with the Environmental Defense Fund to develop a proposal that shaped the state's final rules. The new rules will also remove 90,000 tons of smog-forming volatile organic compounds — about what the state's cars and trucks discharge each year — and 100,000 tons of methane from the industry's emissions.

Reducing air pollution makes good business sense. Why waste natural gas, when capturing emissions and reducing leaks is so cost effective? E.D.F. recently commissioned a study that evaluated currently available measures to reduce methane emissions. The measures could cut emissions by 40 percent over five years — at a cost of less than a penny per thousand cubic feet of gas produced, which today costs between \$4 and \$5.

Now the Obama administration is developing a methane-reduction strategy. We're confident the Environmental Protection Agency will recognize, as Colorado did, that sensible rules are necessary and affordable, and will work with states to write them. And we hope that as in Colorado, industry leaders, elected officials and environmentalists will

work together to make shale gas development safer. Doing so will not only help the industry meet reasonable pollution limits, it will help the industry regain public trust.

Michael R. Bloomberg, mayor of New York from 2002 to 2013, is the founder of Bloomberg L.P. and Bloomberg Philanthropies. Fred Krupp is president of the Environmental Defense Fund.

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