Methane

More heat in the energy debate

New research casts doubt on the cleaner-fuel credentials of natural gas. But this risks letting other dirtier fossil fuels off the hook, argues Jon Entine

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Gas stays in the mix, for now

Methane is a Jekyll-and-Hyde chemical. When combusted in the form of natural gas it releases energy, accounting for one-fifth of worldwide consumption. And as I noted in my March column, gas extracted from shale could supply 50% of US needs within this decade.

But it's controversial. Consider last year's BP Gulf disaster. When the ecological impact is totalled, the release of methane may prove more problematic than the oil spill.

According to a study published in Nature Geoscience, researchers estimate that methane constituted up to 40% of the leak – 500bn tonnes. It can feed bacteria and may be toxic to sea life. But most troublesome is its reputation as a greenhouse gas. Methane traps heat in the atmosphere 20 times more potently than carbon dioxide.

Let's not operate under illusions. The world cannot dramatically move away from inexpensive fossil fuels. We consume 250m barrels of oil equivalent each day, only a tiny fraction of which is wind or solar.

So, if we want to keep the lights on, we need natural gas, in abundance. For years, the commonly held belief has been that this is not such a bad thing. The peer-reviewed lifecycle analysis by the National Energy Technology Lab and Carnegie-Mellon University professor Paulina Jaramillo estimates that natural gas runs 40-60% cleaner than coal.

But Robert Howarth, a professor of ecology and environmental biology at Cornell University, has single-handedly thrown a methane cloud over this otherwise optimistic scenario. He's taken the same data available to Jaramillo but radically changed the computer model. He claims planet-warming methane is escaping in far larger quantities than previously thought from shale gas wells, from venting or flaring or seeping from loose distribution pipefittings, making even dirty coal a better environmental choice.

Howarth's analysis, which has not been peer reviewed but has been circulating for more than a year, got a huge boost in April when the New York Times ran a front page story about it.

But here's the rub. Methane gas, while problematic, dissipates in the environment within about 10 years, while CO2 takes a century or more to disperse.

Timescales

Howarth unilaterally shortened the classic greenhouse gas impact evaluation time, which is the standard used by the UN IPCC and in the Jaramillo study, to 20 years. That dramatically amplified, by three times, the projected warming impact of methane, making it appear that natural gas is 1.2 times more "polluting" than coal.

Why is Howarth so aggressively promoting this thesis? He hasn't defended his unusual modelling assumptions. For the record, he is a campaigning scientist. He openly protests against hydro-fracking – the extraction of hydrocarbons by forcing fluid into rock – in western New York. But his activism is irrelevant – if his science should prove persuasive.

Howarth's salvo hasn't hit home, particularly on the left. Michael Levi, energy and environment fellow at the Council on Foreign Relations, says: "As far as long-term concentrations, which are the primary focus for policy, go, this is the wrong choice."

The equally progressive Worldwatch Institute is also dismissive, but for another reason. Howarth, it says, "seems to ignore the amount of methane emitted during coal mining", which is far higher than emissions associated with natural gas extraction, making it an "apples to oranges" comparison.

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Howarth appears motivated more by a dislike for fracking than for concern about global warming. His data, by his own admission, is "lousy", "limited", "really low quality" and "questionable".

Methane gas – in landfills, wastewater treatment, agriculture, certain industrial processes, oil production and coal mining – presents a genuine challenge. But fugitive methane releases are, or at least should be, easy to prevent or capture. While many gas companies downplay leaks, BP has for a decade shown that stopping leaks saves three times as much as it costs.

Government agencies have the ability to monitor and fine emitters. The danger is that Howarth's frothy study will take momentum away from efforts to require industry to monitor and measure leakage rates, improve public disclosure and tighten capture requirements.

Worldwide Watch says it is "irresponsible to offer the coal industry more ammunition in its fight to continue … dependence on what is, we remain convinced, the dirtiest fossil fuel". ■

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