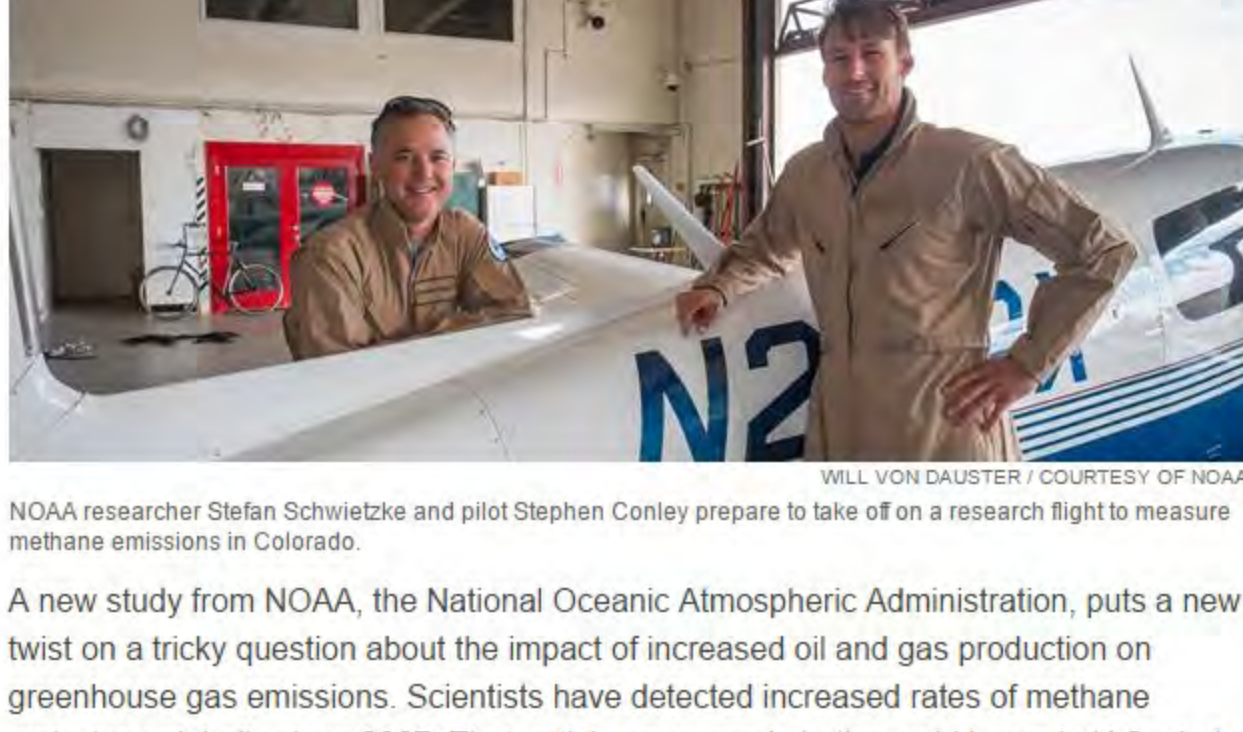


While global methane emissions are up, study says fossil fuels not the culprit

OCTOBER 5, 2016 | 8:19 PM
 BY SUSAN PHILLIPS

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A new study from NOAA, the National Oceanic Atmospheric Administration, puts a new twist on a tricky question about the impact of increased oil and gas production on greenhouse gas emissions. Scientists have detected increased rates of methane emissions globally since 2007. That uptick corresponds to the rapid boom in U.S. shale gas and shale oil production, and some hypothesized that the two could be connected. But it turns out that the correlation may not necessarily be a cause.

The research published Wednesday in the journal Nature found that although previous methane emissions from fossil fuel production, which includes coal, oil and gas, were significantly underestimated, the overall atmospheric increases in methane is not due to oil and gas production. NOAA, which has been measuring methane in the atmosphere since 1984, says the global increase in methane could be coming from microbial sources including wetlands, rice paddies and agricultural livestock like cows. Methane is considered more potent a greenhouse gas than carbon dioxide because although it breaks down more quickly than CO2, it traps heat 28 times more effectively over the course of 100 years.

Researchers compiled the largest database yet on global methane, which produced a truer picture of the total number of methane molecules in the atmosphere, as well as a clearer view of where that methane originated. As a result, the researchers say they've identified more methane from oil and gas production than previously thought, an increase of 20 to 60 percent. But that's not enough to account for the global rise of methane in the atmosphere.

"We recognize the findings might seem counterintuitive — methane emissions from fossil fuel development have been dramatically underestimated — but they're not directly responsible for the increase in total methane emissions observed since 2007," said lead author Stefan Schiwietzke, a scientist with the Cooperative Institute for Research in Environmental Sciences (CIRES) at the University of Colorado Boulder, working in NOAA's Earth System Research Laboratory.

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Schiwietzke says that while natural gas production has increased, the rate of methane leakage, or the amount of natural gas that escapes or is vented as measured against the amount that is captured and sent through a pipeline to market, has actually decreased from 8 percent to 2 percent in the last 30 years.

"What we found is that the absolute amount of emissions has remained constant, while production of fossil fuels has increased dramatically," said Schiwietzke.

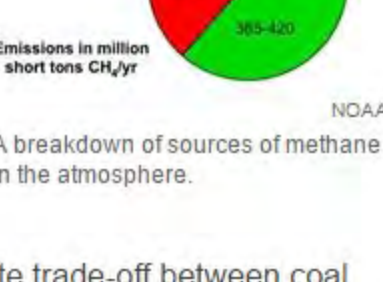
The two percent leakage rate holds up to research conducted by Carnegie Mellon University, which measured methane leaks from both conventional and unconventional wells in

Pennsylvania's Marcellus Shale. Their results were published this year in Environmental Science and Technology.

"The two percent is in the same ballpark as what we've been measuring," said Albert Presto, a professor at Carnegie Mellon University who was not involved in the NOAA research, but was the lead investigator on the Carnegie Mellon study. Presto's work, like the NOAA report, also found that leaks from gas sites were higher than previous measurements, in this case those recorded by state regulators.

But that two percent is significant when comparing the greenhouse gas footprint of natural gas with coal.

In 2011, Cornell University professors Robert Howarth and Anthony Ingraffea, published a controversial paper on shale gas, raising questions about the amount of methane released during production and whether those emissions cancelled out the gains from less carbon dioxide emitted at the power plant, when compared to coal. Citing a lack of data and the need for more research, Howarth and Ingraffea estimated that methane emissions from shale gas was 3.6 to 7.9 percent of total production. More research and more debates over the climate trade-off between coal and natural gas have followed. The Environmental Defense Foundation has conducted it's own studies, working with industry to encourage plugging leaks and eliminate flaring.



In a study published in the Proceedings of the National Academy of Sciences in 2012, EDF scientists Ramon Alvarez and Steve Hamburg estimated that replacing coal burning power plants with natural gas benefits the climate as long as the methane emissions rates of gas production stay below 3.2 percent.

"This [NOAA study] sort of suggests that they're either at that limit or below it," said Presto.

NOAA's Stefan Schiwietzke says different researchers have concluded that different leak rates mark a threshold when attempting to determine the point at which burning natural gas emits less greenhouse gas than coal. But he says, his results are "within the range" of what most researchers conclude burning natural gas is less damaging than coal.

Still, the NOAA researchers say the industry can and should do more to reduce methane emissions.

"Our study shows that leaks from oil and gas activities around the world are responsible for a lot more methane than we thought," said co-author Lori Bruhwiler, a NOAA research scientist. "The good news is that fixing leaking oil and gas infrastructure is a very effective short-term way to reduce emissions of this important greenhouse gas."

Some scientists and activists say regardless of the leakage rates, climate warming is happening at such a rapid rate that as much as possible fossil fuels need to remain in the ground while the world switches to renewable energy sources.

Although scientists have always known that microbial sources of methane represented a large portion in the atmosphere, the research could have an impact when it comes to tackling sources of greenhouse gases that are not related to fossil fuel production. Schiwietzke says recent rise in atmospheric methane is from microbial sources. He says more work needs to be done to pinpoint what microbial source is the greatest culprit. Another NOAA research paper released this year points to equatorial wetlands, which have seen an increase in precipitation since 2007 due to weather patterns like La Nina. Other microbial sources of methane include ruminant emissions (cow burps for example), rice paddies and landfills. Biomass sources of methane include forest fires, and wood burning cook stoves, primarily used in developing countries.

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bumpski 12 days ago

My trees are dying.

"replacing coal burning power plants with natural gas benefits the climate as long as the methane emissions rates of gas production stay below 3.2 percent."

This is a good article and a good point by those interviewed. But so many articles about this topic, coal versus gas, ignore all the other negatives of coal, as an energy source.

1. Acid rain over the entire Northeast.
 - a. my trees fall and have no roots
 - b. acid rain depletes nutrients, magnesium is depleted.
2. Mercury pollution, and mercury laden freshwater fish.
3. Abandoned and burning coal mine methane (and other) emissions are not quantified.
 - a. one active coal mine releases as much methane as a typical natural gas well would if opened to the atmosphere.
 - b. The are 600 active coal mines in the US alone, the are 500,000 abandoned coal mines (miners could be sealing these off for decades)
 - c. There are hundreds of coal mine fires, releasing untold quantities of various...

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Karen Orlando bumpski 8 days ago

Hard to believe we are having this coal vs natural gas discussion in the present at all isn't it? Seems kind of backwards to me.

1 ^ v . Reply . Share .

NorthernTier bumpski 11 days ago

Also, the "beneficial use" of bottom ash as anti-skid in the winter. (Which, in fact, builds up in intersections/on turns and causes accidents.)

1 ^ v . Reply . Share .

JMan bumpski 12 days ago

Acid rain over the entire Northeast.

Not an issue for most modern plants since they've almost all been fitted with scrubbers since the 80's.

2. Mercury pollution, and mercury laden freshwater fish.

Again, not an issue, 99.9% of the mercury is trapped in the scrubber or the bag house filters.

3. Abandoned and burning coal mine methane (and other) emissions are not quantified.

---a. one active coal mine releases as much methane as a typical natural gas well would if opened to the atmosphere.

Please cite a source for this statistics, I'm on the technical side of the industry and I've never heard this. Cite your source when you throw out such specific generalist statements.

see more

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bumpski JMan 12 days ago

Sir

https://stateimpact.npr.org/pe...

At the link above which was also at the end of my post there are 4 comments by bumpski at the end of the article which provide quite a few specific sources for what was said in my post above. So I see you must have missed the one reference above I did provide, or not have taken the time to check it out.

So now I ask you for your sources? You provided none!

References to what I have said are simple searches away. You've heard of Centralia right. There's a fire cooking away in Wilkes Barre, there are many others. Natural gas fired generation is now available burning pure oxygen, and these power stations are capable of being air cooled they are so efficient. Conceivably a power station such as this could be located near a coal mine fire and the CO2 waste used to slowly extinguish the fire.

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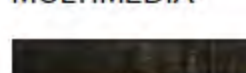
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