

## Methane leaks

# A dirty little secret

### Natural gas's reputation as a cleaner fuel than coal and oil risks being sullied by methane emissions

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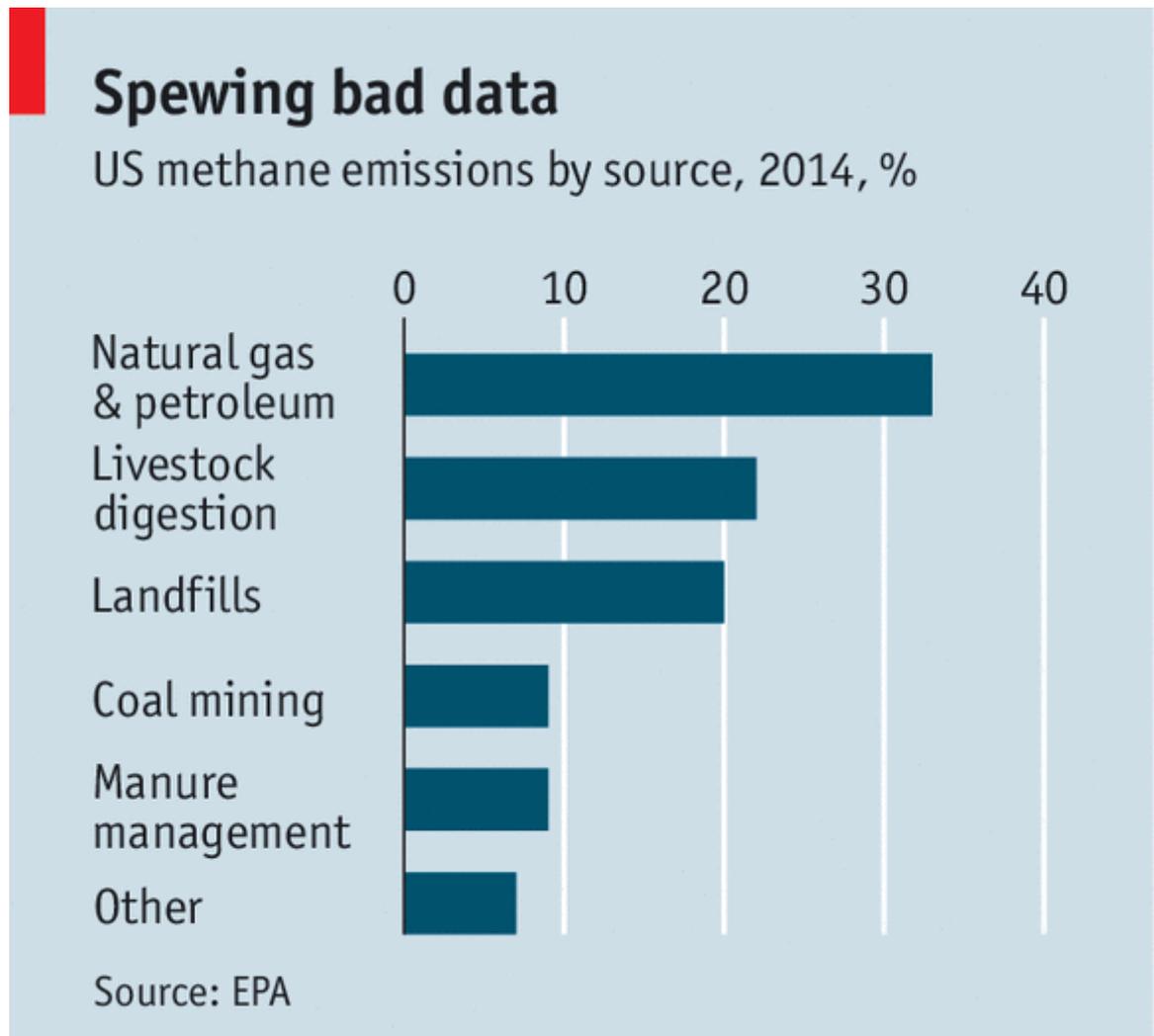
METHANE is invisible to the naked eye and does not make for good television. So when about 100,000 tonnes billowed out of a natural-gas system in Aliso Canyon, Los Angeles, over 112 days last winter (pictured in infra-red above), it drew relatively little media attention—even though it forced the evacuation of thousands of homes and the plume was big enough to be detectable from space. Compare that with coverage of the Deepwater Horizon oil spill in 2010, which was the top item of news for weeks in America, much of it focused on the environmental impact on the Gulf coast.



Unsurprisingly, many oil and gas companies would prefer methane leaks to remain out of the public eye, even though their industry now surpasses cow burps as a source of emissions (see chart). Methane is the predominant constituent of natural gas, a fuel that energy companies are embracing over oil and coal as a “bridge” to a post-carbon future and which has been given a new lease on life by America’s shale revolution. When burned, it emits about half as much carbon dioxide as coal and far less sulphur, soot and other pollutants. But greenhouse gases insulate the Earth in different ways. Carbon dioxide stays in the atmosphere for more than 500 years; methane just for 12. But the latter is about 25 times more potent.

The American Petroleum Institute (API), a lobby group, says America is in “good shape” thanks to natural gas. As it has over time rivalled coal as the main source of power generation, it has helped lower emissions of the main source of global warming. The institute cites data showing that the amount of methane that leaks out of natural-gas wells and pipelines criss-crossing America has fallen over the

past quarter  
of a century.  
“Let’s not get



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unreasonably concerned about [methane], because the industry has been addressing it,” says the API’s Erik Milito.

Yet even environmentalists who acknowledge a preference for natural gas over coal believe methane leaks could be its fatal flaw. The Environmental Defence Fund (EDF), an American NGO that works with industry to reduce methane emissions, has in recent years deployed infra-red cameras along energy firms’ pipelines and beside thousands of oil and gas wells, as well as airborne monitoring kit to gather data. The results suggest methane leaks are significantly higher than had been previously understood.

EDF has found that a disproportionate amount of fugitive emissions from the oil and gas infrastructure comes from a few “super-emitting” sites. In rare cases, like Aliso Canyon, they can take months to plug. More often the culprits may be well-side storage tanks with faulty valves, which may be fixable just with a wrench, but while left unattended billow methane into the air.

Recently, the Environmental Protection Agency (EPA), an American regulator, has introduced its first regulations specifically aimed at capping methane emissions, acknowledging it has underestimated the

problem. It has lifted its estimate of the amount of methane that leaked out of the natural-gas and oil supply chain in America in 2013 by about 30%—a massive revision. Steve Hamburg, EDF's chief scientist, says that still leaves out the “fat-tail” super-emissions. He reckons about 2-2.5% of the gas flowing through the American supply chain leaks out, in total.

Get much higher, and that would endanger the argument that natural gas is over all time periods cleaner than coal. And if natural gas emerges as a rival to petrol as a transport fuel, as European companies such as Royal Dutch Shell strongly hope, such levels would erode the net climate benefit altogether, Mr Hamburg says. “Switching from coal to gas is always advantageous to the climate over the long term, but the short-term benefits depend on minimising methane emissions,” he says. He has experience of methane's effect at his cabin in the White Mountains of New Hampshire, where global warming means that trees now grow in places he would never have thought possible.

Oil and gas producers acknowledge it is in their interest to curb leaks; it gives them more natural gas to sell. They say they are stepping up monitoring efforts, and have increased the use of “green completions” at shale wells to capture methane emitted at the end of the fracking process, rather than flaring it at the well head. Big European companies appear to take the reputational risk seriously. “The industry realises it needs to get its act together,” says one executive. BP, for instance, has designed a gas project in Oman that should be leak-free. Italy's ENI has set publicly available targets for cutting methane emissions.

Some state-owned oil giants, such as Saudi Aramco and Mexico's Pemex, have joined global efforts to reduce methane emissions. But many reckon firms in Russia, Angola and Nigeria would show up as big emitters if reliable data were collected. A report last year by the Rhodium Group, a research firm, said large producers such as Iraq, Angola and Libya had never reported methane-emissions numbers to the UN. Without good global data, it will be impossible to get the problem in hand.

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