

THE CONVERSATION

Academic rigour, journalistic flair

Science and coal seam gas – a case of the tortoise and the hare?

December 8, 2014 6.18am AEDT



Aerial image of gas fields in the Darling Downs. Can science keep up with coal seam gas expansion?
Google Earth

Authors



Damien Maher

ARC DECRA Fellow, Southern Cross University



Douglas Tait

PhD Student in Biogeochemistry, Southern Cross University



Isaac Santos

Professor, School of Environment, Science and Engineering, Southern Cross University

One of the key questions about the coal seam gas (CSG) industry, which is now being developed at breakneck speed across Australia, is how much methane is released as “fugitive” emissions.

Three weeks ago we published a paper containing the first detailed maps of atmospheric greenhouse gases in Queensland’s CSG heartland. Our study clearly exposes the lack of knowledge in this area, leaving open the question of whether CSG really is greener than coal.

This research has seen us caught in the middle of a scientific, economic and political tug of war. While the industry keeps expanding at a rapid rate, is CSG science moving too slowly?

Incidental research

Our story started in 2012, when we won an Australian Research Council grant to purchase cutting-edge greenhouse gas monitoring equipment, which we initially planned to use to investigate coastal waters, rather than CSG fields.

At about the same time, our local community in northern New South Wales was fired up over concerns about future CSG development. Campaigns such as Lock the Gate began to gain traction, and the issue prompted large rallies.

One of the community's main concerns was about the lack of scientific information. While no experimental Australian data other than our recent papers has been published in the peer-reviewed literature on fugitive emissions, the NSW government has released a broad review of CSG, and CSIRO has recently released initial experimental results on fugitive emissions from some CSG wells.

Fugitive emissions were often viewed as a minor issue, with much of the concern focused on CSG impacts on groundwater. In 2012, we had at our disposal cutting-edge instruments not only to measure the concentrations of greenhouse gases with extremely high precision, but we could also detect their “chemical fingerprint” to pinpoint sources.

We drove to the gas fields of Queensland's Darling Downs region, where CSG production has been proceeding at full steam for a decade or more. That night we stayed in a hotel filled with mining workers in hi-vis clothing and a carpark full of utes with flashing yellow lights. Our plan was to survey the local area, both inside and outside the gas fields. We detected increased methane levels across wide areas of the Darling Downs (compared with our local area of Casino, NSW).

A day's drive had produced more data than was available from the CSG industry or the Queensland government after more than a decade of mining.

To share or not to share?

Our results pointed to something unusual in the gas fields. We felt compelled enough to share our findings in a submission to the Department of Climate Change and Energy Efficiency. We also held a seminar in Lismore, NSW, in November 2012 that triggered a rollercoaster ride of media, political and community interest in our research.

Then came the backlash, with criticism that our data had not yet been peer-reviewed and was therefore worthless (despite it being common practice for scientists to present research at conferences and seminars before peer-review). We were attacked by the industry and even by the then federal resources minister, Martin Ferguson.

In response, other politicians and our university's Vice Chancellor Peter Lee, joined the fray in our defence.

This was no longer just a matter of science. With billions of dollars invested, thousands of jobs promised, and growing community interest in the topic, we were in the middle of a political and social firestorm. If fugitive emissions turned out to be significant, the industry may not be economically

viable in the face of a price on carbon, and the major assumption that natural gas was a clean source of energy could be dismissed.

We spent weeks fielding calls and emails from the media, the community, colleagues and even investment companies seeking advice on divestment (we had none).

The initial media frenzy died down, and last year our first study was peer-reviewed and published. A few weeks ago, we followed this up with our second paper. Each paper produced its own extra flurry of media attention, criticism and counter-criticism.

It has been said that procrastination is the grave in which opportunity is buried. CSG wells have a typical lifetime of 10-20 years. Government reviews have taken 19 months to complete. Our initial experimental results have taken from 6 to 24 months to be peer-reviewed. Will the wells run dry before peer-reviewed science can explain what is coming out from them?

Only time will tell.

 [Fracking](#) [Coal seam gas](#) [Greenhouse gases](#) [Queensland](#) [CSG](#) [fugitive emissions](#) 

Found this article useful? A tax-deductible gift of \$30/month helps deliver knowledge-based, ethical journalism.

[Make a donation](#)