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Fracking – Britain's Next Revolution

By Lesley Docksey
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> 'Water, water everywhere,
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> Nor any drop to drink.'
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> Samuel Taylor Coleridge: *The Rime of the Ancient Mariner*

At long last Britain is discussing and objecting to fracking – or we would be if the general public had access to accurate information. As it is, Prime Minister David Cameron is going all out to promote a country-wide embrace of shale gas.

Forgotten is his promise to lead the 'greenest government ever'. Forgotten is the fact that shale gas is yet one more fossil fuel that increases the risks from climate change; that methane is far worse than most carbon emissions where global warming is concerned. No, no. Instead he invites us to gaze on the Nirvana of cheap energy, energy that will allow the poor to heat their homes – presumably while they also try to cope with rising food prices, stop their homes from being flooded because of extreme weather events or, if they are ill or elderly, dying during ever-increasing heat waves.

He claims it will 'drive energy bills down'; provide jobs; bring money to local neighbourhoods. He doesn't give this last claim its accurate and truthful label – bribery. In order to persuade people to allow fracking in their community the energy companies have government permission to give communities £100,000 for each exploratory well plus 1% of all their profits from the fracked site, not that the 'profits' will be that much compared to costs, or last very long.

Because the shale containing the gas is fractured, after an initial burst of gas being captured and brought to the surface, a great deal of it simply leaks sideways through the fractures. Some studies show that a well's output can drop by 60% within a year, and by as much as 90% within 5 years of coming into production, requiring the well to be 'restimulated'. How sexy. Why don't they get honest and call it re-fracturing? If that fails to improve the production then another well – or two – can be drilled. In other words, fracking never involves single wells.

Nor is it that profitable. As this report from a group of New York state businesses says, "Studies funded by the natural gas industry have exaggerated benefits and ignored significant costs". Fracking is really not doing as well as Cameron implies. It is not the great economic boom he is asking us to grasp with both hands. Beware nettles, say I. The government is also bribing the energy companies by offering them large tax breaks for which, ultimately, the tax payer will pick up the bill.

Cameron says it takes 'courage' to go ahead with drilling for shale gas. No. It takes bare-faced cheek for a politician to attempt to con the public quite this much. It takes genuine

courage to study and accept the plethora of evidence that is available from countries that have firsthand experience of the frightening effects of the fracking process, evidence that demonstrates why no country should go ahead with fracking.

He and his ministers are only interested in three things: the promise of cheap energy might buy votes at the next general election; the money they will make themselves (around a third of government ministers have links with energy and finance); and taking the country down the fracking path will allow them to ignore climate change, which they really do not have the courage to do anything effective about. But this being a government of rich men, mostly of the 'their loss, our gain' variety, fracking is about money, and when Cameron speaks about shale gas one can almost see the pound signs revolving in his eyes.

Pity the uninformed British people who are being swept down this road by Cameron's evangelistic and very misleading fervour. Let's put things into perspective. The largest US shale gas field, the Barnett Shale in Texas, is around 5,000 square miles. England, where almost all of the UK fracking (if allowed) would take place, is 50,600 square miles, no more than 11 times larger than the Barnett Shale, which already has over 16,000 wells. And England is very small, crowded and home to some 53.5 million people.

The real issue which is not being discussed in public, let alone addressed, is water or rather, one aspect of it. Cameron says that "international evidence shows there is no reason why the process should cause contamination of water supplies and other environmental damage *if properly regulated*" (my emphasis). But internationally, energy companies have shown little regard for regulations or the environment, and certainly not where profits are concerned. And proper inspection and enforcement of the regulations will cost money that we have not got, and would not spend if we had.

Despite the denials from supporters of fracking that the process can contaminate underground water supplies, there is plenty of evidence that it happens. A recently released study by Texas University found heavy metals such as arsenic, selenium and strontium. One of the report's authors Brian Fontenot, said, "that any time you have water wells that exceed the maximum contaminate limit for any of these heavy metals, they are within about three kilometers of a natural gas well". An Australian study echoed findings from the US, with details of farmers' water supplies being unusable and farm stock dying from drinking contaminated water.

But forget all the recorded incidents of tap water full of methane that can be ignited, drinking water causing illness and cattle dying. There is another source of water contamination which is totally absent in the British conversation about fracking, and it is one that has wide implications, involving contamination of rivers, streams and farmland. It is also responsible for much of the increase of heavy traffic generated by any fracking.

The fracking process requires water, lots of it. According to EEC the early fracking technology used "20,000 to 80,000 gallons of water per well, but today's advanced fracturing techniques can use up to 8 million gallons of water and 75,000 to 320,000 pounds of sand (proppant) per well." The amount will be doubled each time any well has to be 'restimulated'; trebled if another well has to be drilled.

This water will probably have to be trucked in *and stored on site*. I repeat – England is a small and crowded country with a water-hungry population. Further, the land outside cities

and towns is mostly devoted to agriculture. Despite Britain being relatively blessed with water, any prolonged dry spell results in hosepipe bans for householders and farmers struggling to irrigate their crops. As a recent Worldwatch Institute report put it, "the sheer volume of water consumed during hydraulic fracturing could make unconventional gas production costly and unsustainable in many areas of the world that are water constrained."

Millions of gallons of water being taken from the local public water supply will result in some very British water wars. It will also result in more heavy traffic on narrow rural roads. The US Department for Environmental Protection estimates that "In Pennsylvania, one horizontal Marcellus well requires 1,000 truck trips during drilling and fracking".

However, says EEC, "in most cases, only 20-40% of the carrying fluid flows back to the surface and the rest remains deep in the ground." So, two thirds of that now-contaminated water is lost underground. That still means that 2 million gallons or more of waste water per well has to be dealt with. As the water that was forcibly pumped down the well was full of perhaps 100 tons of sand (that has to be separated from the recovered water, requiring an on-site separation plant) plus the added 'chemicals', the treatment of the waste water is a major problem. More salts and heavy metals are picked up by the injected water during its underground trip. All this has to be dealt with. If Pennsylvania's DEP fails to competently inspect the wells is there any prospect that the UK would do any better? Pigs and Cameron might fly.

As almost all US water-treatment facilities are unable to strip the water of heavy metals and other substances, it is hardly likely that British facilities are any more capable. In America much of the contaminated water from the Marcellus Field in Pennsylvania is trucked to Ohio, where it is dumped in disposal (old oil) wells. And please note: the DEP's estimation of 1000 truck trips does not appear to include trips to remove waste water and, in this cash-strapped age, we should also add the problems of roads needing to be resurfaced more frequently as well as the higher risk of road accidents.

Waste water is also sent to water treatment facilities that take out what they can before discharging the still-contaminated water into the river system. The third option is to store the toxic water in holding lagoons next to the fracking site. These leak or, in the case of heavy rainfall, overflow, causing contamination of farmland, and water sources, leading to streams and creeks suffering a loss of all life within their water.

While some British commentators have picked up on the issue of the large amounts of water needed for the fracking process in competition with agriculture, no one appears to be aware of the dangers of the waste water. Allowing an energy company to drill a shale gas well in your locality involves a lot more than a hole in the ground.

And if nothing else will put us off the prospect of fracking in our neighbourhoods, this description of a fracked community should:

"Visit a place like Dimock, Pa., a town just north of Scranton and just south of Binghamton, N.Y., and you'll see many large clusters of water tanks; long convoys of big trucks carrying drill pipe, water, and other supplies; compressors, water-sand separators, and other machinery; and drilling derricks, which, at 30 to 50 meters in height, are not tiny. Far more subtle, as Dimock citizen Vera Scroggins points out, are the yellow wires running along the sides of roads to produce seismic readings, vent pipes installed at residential wells to remove methane that has leaked into drinking water, and the tops of plastic-covered semi-

subterranean walls that have been installed to prevent chemical-laden surface water from migrating into fields adjacent to drill pads."

Do we really want to turn England's 'green and pleasant land' into a place like this?

It is time we recognised the one huge elephant in the room – all fossil and nuclear fuel production produces toxic waste – in vast quantities. We cannot go on dumping it or burying it in the earth. The world is not our dustbin, no matter how much energy companies and governments want us to treat it that way.

Articles by: Lesley Docksey