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Cuadrilla Works to Minimise Environmental Impacts



Shale gas: how Cuadrilla aims to answer the critic

A viable source of natural gas or a misguided distraction from renewable energy sources? Shale gas has proved controversial in the US - and in the UK environmental groups are united in opposition. Rob Bell hears how for Cuadrilla - the company carrying out exploration work in Lancashire - best practice is key.

For a UK rapidly running out of domestic natural gas resources, shale gas holds great promise - the promise of lower reliance on imported fuel for electricity generation in a world of plummeting energy security and skyrocketing prices.

However, the hydraulic fracking process by which shale gas is extracted has a major PR problem - particularly in the US, in the aftermath of the Gasland documentary, with its startling images of setting taps on fire.

Also, environmental groups are united in their belief that investment, engineering expertise and R&D dollars should be focused on developing renewables, not squeezing the last drops from our fast-diminishing fossil fuel reserves.

Friends of the Earth's head of science, policy and research Mike Childs' stance has no room for manoeuvre. He says: "Reports show although shale gas is a cleaner fuel than coal, extracting it could pollute groundwater.

Shale gas extraction should be stopped in Britain - the Government should focus on developing the clean, safe energy alternatives at our fingertips like solar power and wind."

Mark Miller, CEO of [Cuadrilla Resources](#), the "first UK company to explore unconventional energy sources", currently carrying out shale gas exploration at two sites in Lancashire, says he understands Childs' position, but the UK is in no position to ignore a viable source of natural gas.

He says: "I know a lot of people would like to remove fossil fuels from the picture straight away, and while I respect their opinion, it is not a realistic goal.

"My answer to the critics is that shale gas is a great bridging fuel, which will give us the opportunity over the next decade or so to reduce the amount of energy coming out of coal-fired power plants and during that time up the amount coming from renewables.

"People need to look at this from a realistic point of view and admit we can't just stop using fossil fuels today."

Miller is adamant shale gas will be an important source of energy for the UK in years to come.

He says: "About 14% of power generated in the UK comes from burning natural gas: we're trying to find how much of that natural gas could come from the UK itself instead of being imported from elsewhere.

"North Sea gas has been declining for years, and by 2020 about 80% of the natural gas burnt here in the UK will be coming from outside the country. Even if nothing else comes out of our exploration programme, we'll be able to report on the amount of gas in the ground and the amount we feel could be extracted."

And even in this exploratory phase, Cuadrilla is working hard to minimise environmental impacts and combat shale gas extraction's poor reputation.

He says: "The guy lighting his tap in Gasland is a really spectacular image, but one that had nothing to do with the gas well, something that has been proven not just by the oil and gas industry but also by environmental groups.

"In fact, most of the issues people in the US are scared about - high benzene levels in Texas, fish kills in Pennsylvania - none were related to gas wells.

"If somebody finds a couple of examples of bad practice, it represents a very small minority and is unrepresentative of the oil and gas industry in general. You'd probably find it is one well in 10,000."

Miller may profess to understand the anti-lobby's view, but he rails against what he perceives as a willingness to exaggerate the facts to promote their agenda.

He says: "I respect those opinions, the issue I have with some elements of the green lobby is trying to scare people - saying that we're putting dangerous chemicals in the ground, that we are going to pollute the groundwater table.

"A tactic of green groups is to instil fear in the public that there's a lot more of an issue with groundwater contamination than really exists."

Regardless of the extent to which the environmental risks of shale gas extraction have or haven't been overplayed by its opponents, the pressure is certainly on to demonstrate environmental best practice, particularly for a firm like Cuadrilla, which is pioneering the technique in the UK.

Cuadrilla has committed to being a "model company" for shale gas exploration in the UK and describes itself as "acutely aware of the responsibilities that brings, particularly with regard to safety, environmental protection and working with local communities".

For Miller, this means "doing everything by the book, following industry best practice to make sure there's no threat to groundwater, property or the workforce out there".

Miller says UK regulation is tough - requirements differ from state to state in the US, and he says the UK's would rate among the strictest across the Atlantic - but Cuadrilla's commitment to best practice means the company is already going beyond the requirements of most.

For example, New York State has had a de facto moratorium on fracking in place since late last year.

He says: "When you hear about gas getting into groundwater you can usually go back and find that what's called the intermediate casing - which ensures any gas from the bottom zones that tries to escape is trapped and shows up at the wellhead instead of moving migrating through the ground - has been eliminated.

"The State of New York recognised the importance of intermediate casing, and has made its installation one of the conditions that must be met if drilling is to resume as part of its focus on preventing damage to groundwater.

"But this is something we've been doing from the very beginning."

In the US it is often common practice - particularly among smaller companies, which tend to be less conscientious about their sustainability performance - to dump drill cuttings and pulverised rock into bulldozer-dug pits to save money.

Often these are unlined, and Miller says fluid filtrate simply leaks into the ground, while pits are covered and forgotten. But again Cuadrilla is ahead of the curve.

He says: "The issue made the top ten list in New York State before drilling could restart, but again it's something we've been doing all along.

"We also install an impermeable plastic layer under the entire well site, which functions like a bathtub, so even if there was a diesel fuel spill - or any other incident you could imagine - it would not get down to the groundwater, but would be trapped and drained off to be removed safely - we do this as routine practice here, but it is not done in a lot of North American operations.

"These precautions are starting to be enforced as law in the US, but we've been doing them all along."

Cuadrilla is carrying out exploratory works. However, the company has contracted [Ground-Gas Solutions](#) to carry out ongoing gas monitoring works.

Miller says: "GGS will provide us with levels of naturally occurring background methane so we have data if in the future it is claimed our activities have increased gas levels. And once we know those background levels we'll have an early detection system so if there was still a leak, we'd be able to solve the problem before it escalates."

GGS technical director, John Naylor, says: "In the wake of the press in America, Cuadrilla wants to show everything they're doing is the best it can be, because from the American experience it's clear where any gas is found fingers are pointed at the industry - in some cases it appears to be poor drilling practice, but in a lot of cases it wasn't, with the gas already present from other sources."

Naylor says: "If there are changes, what are the causes? Is it the drilling operation? If so, Cuadrilla has good notification so it can go and do something about it. And if there is no change, that shows they're not adversely affecting the environment anyway."

He says the contract is an important one for the firm, but also for the UK's energy industry. GGS is working with a laboratory to develop new sampling and testing procedures to conduct as part of the monitoring work.

"This is new, so there is no specific legislation for shale gas drilling in the UK, although this may fall under other broader regulations. We're developing what we believe could be considered good practice for the country," Naylor says.

"There's a lot of potential for shale gas in the UK - where we're working is just in the North-west of England, other companies are looking into shale gas in other areas, and beyond that you've got coalbed methane and coalmine methane as well.

"These early contracts will establish what is necessary in the UK. At some point one of the regulatory bodies will decide we need to do X, Y and Z to ensure environmental protection. GGSe are taking the first steps towards establishing what that X, Y and Z will be.

"We will be using cutting-edge laboratory analysis to fingerprint the various ground gases to build up a robust picture of what's down there and form a baseline assessment.

"We need to think about the economic costs as well and come up with solutions that are the most cost effective for the client - so it provides the client with appropriate good practice due diligence and enough information to assist with regulation as it develops in the future."

Naylor certainly believes there is a future for shale gas extraction in the UK.

He says: "In this country we're looking into alternative energy in a big way and 'unconventional petroleum' sources are certainly going to be a piece of the jigsaw for the future of UK energy.

"It's a very significant contract for us, but also for the country. The UK is fast running out of its own resources, particularly natural gas reserves, and prices are going through the roof every year.

"So if we can develop further domestic gas sources that can be sustainably extracted and environmentally managed then it's a very good option for the UK to sit along side as we develop our renewables capacity."

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