

I've become a fossil fuel supporter

Cheap hydrogen, the most viable low-carbon heat source, depends neither on nuclear power nor renewables – but on gas

My timing could scarcely be worse. To announce, in this of all weeks, a Damascene conversion to natural gas is to invite ridicule from every quarter. The price of oil has hit \$75 a barrel, and for reasons no energy company has yet been able to explain to me, it takes the gas price with it. Even before this new surge, the wholesale cost of gas had trebled in just three years.

This winter, we nearly had to do without it altogether. First Russia's state-controlled producer Gazprom cut the supplies to Europe to show Ukraine where real power still lay; then the private monopolists in the European Union appeared to restrict the flow through the "interconnector" that supplies the United Kingdom. At just the wrong moment – February 16 – the UK's main gas storage facility (on the Rough Field in the North Sea) blew up. Centrica, the company which runs it, predicted then that it would remain closed for a month. A month later, the company said it would be shut until May. Now its spokesman tells me that it will be back in business "from June 1". The "from" does not inspire confidence.

Last week, the chief executive of Gazprom, from which the UK buys about a quarter of its natural gas, warned of the consequences this country would suffer if the government refused to let it buy Centrica. "One cannot forget that we are actively developing new markets such as North America and China. Gas producers in Central Asia are also pay [sic] their attention to the Chinese market. It is not by accident. Competition for energy resources is increasing. It is needed to note that attempts to

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limit Gazprom's activity in European market and politicize gas supply issues ... will make no good results." Doubtless he was stroking a white cat as he said it. To make my task of persuasion particularly difficult, Human Rights Watch and the International Crisis Group reported that the European Union, desperate for access to Turkmenistan's reserves, had been ignoring the atrocities of President Niyazov, who is borderline bonkers.

All this means that the British government is even more likely to recommend a new generation of nuclear generators in its energy review in the summer. It can now summon some heavyweight support: on Friday, the Financial Times revealed that the International Energy Agency has converted to the nuclear cause. My fellow environmentalists argue that the money would be better spent on wind turbines. I find myself at odds with almost everyone, by deciding, at the worst possible moment, that in one respect at least our battle against climate change depends on neither nuclear power nor renewables, but on a fossil fuel.

The problem comes down to this: that our homes, whose consumption has grown by 19% since 1990, now account for almost one-third of the energy the UK uses. Of this, only 18% is used for lights and fridges and televisions and the other electronic gadgets with which we now fill our homes. All the rest is used for space and water heating. In the domestic sector, the big issue is not electricity but heat.

I've looked into every source of sustainable heat I can find, and while there are plenty that could supply some of our houses – wood and straw, solar hot-water panels, district heating systems and heat pumps for example – all of them are constrained by one factor or another, such as a shortage of agricultural land, our feeble sun and the disruption involved in fitting them to existing homes. It seems that there is only one low-carbon source of heat that could (with a massive investment in new infrastructure) be supplied to most of the homes in the UK between now and 2030. It is hydrogen. Hydrogen can be used to power a fuel cell, which is a kind of gas battery. If, as their promoters predict, fuel cells can very soon be made small enough, cheap enough and reliable enough to take the place of domestic boilers, they could provide the heat and electricity our homes require. The natural gas pipes to which most of our houses are attached would be replaced by hydrogen pipes. These are about 50% wider but otherwise the system is much the same.

There are three means of making hydrogen without releasing much carbon dioxide: by reacting natural gas with steam and capturing and burying the carbon it contains, by passing steam and oxygen through pulverised coal (and catching the carbon) and by the electrolysis of water. The last option is the one beloved of environmentalists (because the electricity can come from wind) and the nuclear industry.

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But a hydrogen network will be viable only if it is cheap. According to a report by the US National Academy of Engineering, the wholesale price of hydrogen made from natural gas with carbon capture will, in “the future”, be \$1.72 (96p) per kilogramme; from coal, \$1.45; and from electrolysis \$3.93. In other words, if a hydrogen economy is to be taken seriously, the fuel has to be made from gas or coal, rather than by either wind turbines or nuclear generators.

Even in my confessional mood, I cannot bring myself to support coal. I defy anyone who knows what open-cast mining looks like to say the words “clean coal” without blushing. This leaves only gas. If my calculations are correct, the retail price of hydrogen made from natural gas will be about 50% greater than the retail price of gas itself. But because fuel cells supplying both heat and electricity are more efficient than gas boilers, the total cost would be roughly the same.

So it seems to me that a key environmental challenge, odd as this seems, is to ensure that gas has a future in the UK by making its supplies more secure. I don't mean invading Iran or sucking up to Saparmurat Niyazov. I mean increasing our storage capacity so that we cannot be held to ransom – in the short term at least – either by Gazprom or by the companies that control the flow through the interconnector. While other European countries hoard an average of 52 days' worth of gas, the UK stores only 14. As we discovered in February, we've put most of our eggs into one basket: the Rough facility, which can hold about 3bn cubic metres, accounts for 70% of our capacity.

The 10 new projects under construction in the UK will provide us with only 50% more storage space. We need to develop four or five massive reservoirs like the Rough Field site, in which gas is pumped back into depleted fields under the seabed during the summer and then extracted in the winter. As far as I can tell, only one significant scheme of this kind is even being discussed: a proposal by a company called Stag Energy to hollow out 500m cubic metres of caverns from the salt deposits 2,000ft beneath the Irish Sea.

So in two respects, the future seems to lie in the seabed. Our natural gas supplies will be secured and our carbon dioxide buried in old gas fields and salt deposits. All my instincts rebel against this prospect, but there don't seem to be any other answers. Cutting the carbon our homes produce use means using hydrogen, and hydrogen means natural gas. I appear to have become a supporter of the fossil fuel industry.