

“Hot potato in a Lancashire cabbage field”

Fracking update for Diocesan Parish Mission Support Department 8th July 2013



Any consideration of the pros & cons of an issue like “fracking” has to be viewed in the context of global climate change, which itself cannot be ignored by Christians, as it raises questions of justice, fairness, provision, stewardship and love for God, His Creation and His Creatures, including our global human neighbours.

- **Climate change** can occur as a consequence of any process that causes adjustments to a climate system – from a volcanic eruption to a cyclical change in solar activity. However, the phrase is most often used as shorthand for *anthropogenic climate change* – in other words, climate change caused by humans.

The principal way in which humans are understood to be affecting the climate is through the release of heat-trapping greenhouse gases into the air.

Climate change is used interchangeably with another phrase – “global warming” – reflecting the strong warming trend that scientists have observed over the past century or so. Strictly speaking, however, climate change is a more accurate phrase than global warming, not least because rising temperatures can cause a host of other climatic impacts, such as changes in rainfall patterns.¹

The climate change debate has thrown up more than its fair share of confusion, misinformation and divisiveness. Is the science surrounding man-made warming basically settled, or is there on-going debate among climate scientists? How is global temperature change measured?² Has global warming stopped?³ If climate change is happening, how concerned should we be? Who will be affected – and how and when? What’s the worst-case scenario? How realistic are the proposed solutions? And can we afford them anyway? Which piece of academic research, newspaper, politician, amateur expert, lobbyist, do we believe?

“There is strong evidence that the warming of the Earth over the last half-century has been caused largely by human activity, such as the burning of fossil fuels and changes in land use, including agriculture and deforestation.”⁴

“Only a few weeks ago the concentration of carbon dioxide levels in the atmosphere passed through the landmark threshold of 400 parts per million. The UK’s carbon output jumped by 18 million tonnes in 2012 – more than any other country in Europe, whilst investment in clean energy in the UK has fallen to a seven-year low”⁵

For a good clear and up-to-date explanation of the science – with generally widely agreed facts and figures – behind climate change and fossil fuel consumption, read [“The Burning Question”](#)⁶ and this [review](#)⁷

The scientific consensus on climate change is overwhelming and includes 97 per cent of 4,000 academic studies carried out over the last 20 years. However, only 47% of the public accept that there is such a convincing scientific agreement.

¹ The World Meteorological Organisation report [“The Global Climate 2001-2010: a decade of climate extremes](#) analyses how the climate has changed dramatically in recent years. http://library.wmo.int/pmb_ged/wmo_1119_en.pdf

² A helpful, if quite scientific description of the status quo is found at <http://theenergycollective.com/davidhone/239576/recent-trends-key-climate-indicators>

³ In addition to classic ways of measuring temperature of land and sea “there are now multiple indicators of a warming global climate, including humidity, sea level rise, Greenland ice mass decline, snow cover and arctic sea ice extent”

<http://theenergycollective.com/davidhone/239576/recent-trends-key-climate-indicators>

⁴ <http://royalsociety.org/policy/publications/2010/climate-change-summary-science/>

⁵ Luciana Berger, Labour and Co-operative MP for Liverpool Wavertree and Shadow Minister for Energy & Climate Change in the [New Statesman](#) 28-6-2013. <http://www.newstatesman.com/politics/2013/06/david-cameron-hasnt-spoken-about-climate-change-three-years-time-running-out>

⁶ [“The Burning Question”](#) Mike Berners-Lee and Duncan Clark (published 15 April 2013)

⁷ Review of “The Burning Question” by Shell Climate Change Adviser, David Hone <http://blogs.shell.com/climatechange/2013/05/review/> Hone emphasises the importance of developing commercial production scale Carbon Capture and Storage facilities at the point of consumption – i.e. integral to power stations generating electricity from fossil fuels – coal, gas and oil.

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- **What climate change means for vulnerable communities, and what that could mean for us**

Climate change is set to increasingly disrupt food supplies and water resources in vulnerable areas like sub-Saharan Africa and South Asia. The World Bank's report, '[Turn down the heat](#)',⁸ looks at the likely effects of two degrees and four degrees warming on agricultural production, water resources, coastal ecosystems and cities across sub-Saharan Africa and Asia. It warns that a two degree Celsius temperature rise could lead to a 10 million increase in malnourished children in Africa by the middle of the century. By the 2030s, just 1.5 degrees of warming could mean that 40 per cent of the land currently used for growing maize will be unsuitable for growing the crop. More drought means more crop failure, which leads to more hunger.

The report follows on from another report by the Bank last November, which warned **if countries don't fulfil current emissions reduction promises, the world could see a four degree temperature rise by the end of this century.**

As temperatures rise, the sea will absorb heat from the atmosphere, causing it to expand and therefore creating sea level rises.

Recent studies show that the ice sheets in Greenland and Antarctica are melting faster than the snow is replacing the mass. Land glaciers will continue to melt over the coming century which will increase the level of the seas. In their [4th Report the Intergovernmental Panel on Climate Change](#)⁹ predict an average global sea level rise of 0.18 – 0.38m increase by 2100 in the most optimistic scenario and 0.26 – 0.59m in the most pessimistic. Some islands will be affected by sea level rises significantly and their habitats will be threatened. One example is of the small island - Tuvalu in the Pacific, which is already experiencing severe flooding which is damaging their homes and affecting drinking water. The islanders have already started to leave and the rest will have to do so in coming years if the trend continues.

This was brought closely home to us by the recent visit from the Melanesian Christian Mission Team to Chorley, where one of the team – Jack – told me that rising sea levels has very recently forced his family to leave their island that had been their family home for generations.

- **What could climate change mean for the UK?**

A paper published by PriceWaterhouse Coopers "[International threats and opportunities of climate change for the UK](#)"¹⁰ concluded **climate change's impact on food supplies, trade and security around the world could be an 'order of magnitude' more significant for the UK than the changes we experience directly as a result of a changing climate.**

Richer countries like the UK have more resilience to the effects of climate change. In some ways, the country may even benefit - attracting investors as a result of its ability to adapt to changing world, for example. But overall, the threats "significantly outweigh opportunities" the report says.

Rich countries are more resilient to climate change as they are more able to adapt to a changing environment. But in some cases - for example the USA, Australia and some European countries - the UK has such strong business links with those countries that it may still be profoundly affected by how they respond. The UK has weaker links with developing countries - but some, for example Sudan and Eritrea, are so vulnerable that what happens to them could still matter a great deal to the UK, for example because of the need to provide humanitarian aid.

- **Can Christians ignore the challenges of climate change?**

Two recent unsolicited invitations: The Energy Minister, Michael Fallon, in an interview with the House of Commons magazine called "House", dismissed climate change as "theology"¹¹; and a week later President Obama said

"Nobody has a monopoly on what is a very hard problem...., Sticking your head in the sand might make you feel safer, but it's not going to protect you from the coming storm. And ultimately, we will be judged as a people, and as a society, and as a country on where we go from here.

And someday, our children, and our children's children, will look at us in the eye and they'll ask us, did we do all that we could when we had the chance to deal with this problem and leave them a cleaner, safer, more stable world?

What we need in this fight are citizens who will stand up, and speak up, and compel us to do what this moment demands.

*Understand this is not just a job for politicians. So I'm going to need all of you to educate your classmates, your colleagues, your parents, your friends. Tell them what's at stake. Speak up at town halls, church groups, PTA meetings. Push back on misinformation. Speak up for the facts. Broaden the circle of those who are willing to stand up for our future."*¹²

⁸ [Turn down the heat](#) World Bank report 2-7-2013 http://www-wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2013/06/14/000445729_20130614145941/Rendered/PDF/784240WP0Full00D0CONF0to0June19090L.pdf

⁹ http://www.ipcc.ch/publications_and_data/publications_and_data_reports.shtml#UdQo2zvMB2A

¹⁰ <http://www.pwc.co.uk/sustainability-climate-change/publications/international-threats-and-opportunities-of-climate-change-to-the-uk.jhtml> 16-6-2013

¹¹ http://www.politicshome.com/uk/article/79643/energy_booster.html

¹² <http://www.whitehouse.gov/the-press-office/2013/06/25/remarks-president-climate-change>

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So if Climate Change is theology, and if the President of the US says church groups need to speak up for the facts, we, as part of the world-wide Body of Christ should accept these invitations, however uncomfortable they may make us feel, because they resonate with the many divine invitations we accept when we become Christians, accepting God as Creator, Saviour and Sustainer.

Climate change is a serious threat especially to the poor and vulnerable. For Christians, overcoming global warming surely has to be considered a part of following Jesus Christ today. ***If we learn that something is wrong, under God, and we chose to continue to do wrong, where does that leave us, and those who look to God's people for a lead?*** Climate inaction is no longer an option for those who have the love of God in their hearts.

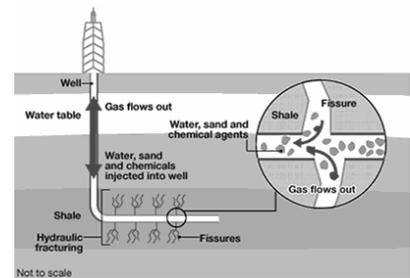
While overcoming global warming will require tremendous changes - and change is hard, sometimes even feeling like "sacrifice" -- I actually think it will bring improvements to our lifestyles. Less pollution and its health impacts, more efficient use of energy, lots of sustainable jobs. The costly investments – in terms of our personal and national and international financial resources, in terms of reduction in our consumption habits, in terms of a lifestyle that challenges the accepted world view - we make can help create a clean energy sustainable future that will be the foundation of our economy in the 21st Century – surely this a sign of the Kingdom?

I genuinely believe that overcoming the impacts of climate change is the next great cause of freedom. I believe that it is of a similar significance for our time, as the issue of slavery was in the 18th/ early 19th century. Reducing global warming pollution, helping our country and the world get a handle on such pollution before we reach dangerous tipping points can free the vulnerable from a tremendous amount of human suffering in terms of impacts averted. And the solutions that help to create sustainable economic progress both here and in poor countries can greatly enhance the democratic and economic dimensions of freedom around the world, especially for the poor.

I believe we are in a “kairos” moment, when every Christian and others of good will are being called to play our part in overcoming climate change and its consequential effect upon God's people and planet alike. There are no longer any legitimate reasons for inaction.

- **So, what does all this have to say about Fracking?**

- “Fracking” is the technique for producing gas via hydraulic fracturing of shale deposits. Deep wells are drilled vertically then laterally often for miles into underground shale deposits, and pumped with water, laced with sand and chemical agents – which fractures the rocks, and releases natural gas (along with contaminated water, often in the form of a residual sludge).
- Britain is in the midst of a dash for gas. In the recent comprehensive spending review, George Osborne re-affirmed the government's support for new inshore gas exploration; March this year saw the creation of a new Office of Unconventional Oil and Gas. At the same time, whilst the Energy Bill progresses through the Houses of Parliament – the [Hansard](#)¹³ record of the Lord's debate is well worth reading to get a sense of all the vested interests there are in this potential energy source - the Government is reviewing and even under pressure to repeal legislation on environmental protection¹⁴, and has committed itself to a minimal regulatory framework to attract investment from the oil and gas industry.
- The [British Geological Survey report](#)¹⁵ 27-6-2013 (covered in [Lancashire Telegraph report](#)¹⁶ 3-7-2013) suggested inland shale might hold enough untapped gas to meet the UK's needs for 25 years. There was a splendid image of a shale rock core sample on the recent Iain Stewart Horizon documentary¹⁷. It is a very hard rock, the gas particles are minute, and vast amounts of water are required to break up the rock and release the gas - the amount of water needed to drill and fracture a horizontal shale gas well generally ranges from about 2 million to 4 million gallons, depending on the basin and formation characteristics. That volume of water has to be transported in and subsequently removed for decontamination.
- The most high-profile unconventional gas project is focused on the Bowland basin here in Lancashire, where the energy firm Cuadrilla aims to frack for shale gas, starting up approx. 8 exploratory wells in early 2014 . There are also shale exploratory wells being considered in Sussex, and other deposits across the UK of so-called “unconventional gas” which can be extracted using the fracking process



¹³ [Hansard](http://www.publications.parliament.uk/pa/ld201314/ldhansrd/text/130618-0001.htm#13061896000391) <http://www.publications.parliament.uk/pa/ld201314/ldhansrd/text/130618-0001.htm#13061896000391>

¹⁴ The UK parliament passed the [Climate Change Act](#) in 2008 <http://www.legislation.gov.uk/ukpga/2008/27/contents>. Voices within government are now calling for aspects of that Act to be abandoned in favour of fully exploiting the unconventional gas potential. (<http://www.thegwpf.org/peter-lilley-nick-stern/>)

¹⁵ <https://www.gov.uk/government/publications/bowland-shale-gas-study>

¹⁶

http://www.lancashiretelegraph.co.uk/news/10515046.New_report_shows_rich_gas_reserves_which_could_lead_to_widespread_fracking_in_East_Lancashire/

¹⁷

https://www.google.co.uk/url?sa=t&rct=j&q=&esrc=s&source=web&cd=2&cad=rja&ved=0CDkQFjAB&url=http%3A%2F%2Fwww.bbc.co.uk%2Fplayer%2Fepisode%2Fb02zldds%2FHORIZON_20122013_Fracking_The_New_Energy_Rush%2F&ei=ji3UUyYrKa3Y0QXsrYGYAg&usq=AFQjCNFEsXY7wzLUJqksS3r3z2iSjxfF6w&bvm=bv.48705608.d.d2k

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- Cuadrilla (Chairman, Lord Browne of Madingley, former Managing Director and Chief Executive Officer of BP) has just sold a 25% stake in its operations to the gas conglomerate Centrica, formerly British Gas, for £40m – hardly a massive investment in terms of the potential billions that are being bandied about.
- Very recently, negotiations between the government and the newly formed United Kingdom Onshore Operators Group had resulted in a new "industry charter". Its key provisions mean that if new gas is discovered, "local communities" could receive financial benefits: £100,000 for every well that is fracked as part of exploration, and 1% of revenues if things prove to be commercially viable. It is highly unlikely that any income generated in such a way will be used to off-set or help local communities adapt to the future impact of climate change. To quote Ernie Rutter, Professor of Geology from Manchester University *“Once people starting seeing the pounds in their pockets, they will be less worried about environmental concerns”*.¹⁸

But how can you compensate people for what might be lost, some of which is listed here?

- Serious risk of contamination of valuable agricultural land at a time when food production is needing to address a hugely growing global population
- Huge consumption of water resources, when increasing global temperatures are already causing serious pressure on water reserves
- Fracking is a very energy and resource intensive process: It has a direct physical impact from the installation of the plant and pipelines; the process creates a large demand for water; both drilling and gas production create sludge – mostly composed of water and rock, but laced with the chemicals used in the fracking fluid, and this requires disposal; all this activity also involves creating noise and smell, and the generation of traffic, and 24/7 light pollution.
- Destruction of habitat for wildlife, public amenity (which of course is inherent in any industrial development)
- Unless serious financial investment is put into carbon capture and storage technology, the burning of gas extracted in this way, is just as detrimental to the level of CO₂ as with any other fossil fuel energy source.
- Although Britain might be short of gas as North Sea production declines, fracking will not solve the problem. Fracking doesn't produce that much gas. Whilst the media recently trumpeted the "huge" shale gas discovery in Lancashire, in fact it is only equivalent to a few years' worth of our annual consumption. The reality is that it will take ten years to bring shale gas into regular production at a level that will “keep the lights” on, by which time more gas-fired power stations will have had to have been built – with a 40 year lifespan. Cuadrilla itself recently admitted that the gas produced as a consequence of fracking will have very little effect on energy prices. Fracking is an expensive way to produce gas – it requires high energy prices to make it viable.
- A 2011 research report by The Tyndall Centre University of Manchester [“Shale gas: a provisional assessment of climate change and environmental impacts”](#)¹⁹ sets out the claim that Fracking exacerbates the climate problem – not just because of the fossil carbon released, but also due to the inherent inefficiency/low energy return of the process.
- Current political, media and local euphoria over prospects of meeting our current energy demands, and aspirations for financial improvement, by using gas extracted by the process of fracking is in contrast to an almost deafening silence from the same protagonists over the extent to which it will affect climate change and the environment of the planet.²⁰
- There are already signs of hope that global energy demands can be met without having to burn fossil fuels to generate that energy²¹

My personal conclusion, having taking all of this into prayerful consideration (of course, I have to say that the Church of England does not have a united voice, or even a particular “party line” on this issue) is that

Any consideration of the pros & cons of an issue like “fracking” has to be viewed in the context of global climate change, which itself cannot be ignored by Christians, as it raises questions of justice, fairness, provision, stewardship and love for God, His Creation and His Creatures, including our global human neighbours.

¹⁸

http://www.lancashiretelegraph.co.uk/news/10515046.New_report_shows_rich_gas_reserves_which_could_lead_to_widespread_fracking_in_East_Lancashire/

¹⁹ http://tyndall.ac.uk/sites/default/files/tyndall-coop_shale_gas_report_final.pdf

²⁰ <http://www.guardian.co.uk/environment/2013/jul/03/josh-fox-gasland-oscar-fracking> The documentary film “Gasland II” could be well worth seeing, as are its predecessor “Gasland”, and [“Promised Land”](#)

²¹ <http://www.iea.org/newsroomandevents/pressreleases/2013/june/name.39156.en.html>