

When you don't look for problems you don't find them – How the Church of England's Briefing Paper on Shale Gas and Fracking Sanctifies the official narrative

Introduction – A one sided argument

In December 2016 the Mission and Public Affairs Council of the Church of England published a briefing paper on shale gas and fracking. In its introduction we are told that the Briefing Paper “uses a range of recent information already in the public realm”. In this critique I will give evidence to show that the chief feature of the Briefing Paper is that the “range of information” it draws upon argues one side of the argument but almost totally neglects to mention the counter arguments and evidence put forward by those opposed to unconventional gas field development.

Evidence from different vantage points?

Towards the end of the briefing paper there is a section on “conflict” and what is supposed to be arriving at decisions for “the common good”. The authors aspire to “defuse inflamed situations”. The paper seeks “reconciliation – not in the sense of crude compromises but by enabling, where possible, different interest groups to hear what each other are saying when the differences of style and vocabulary are allowed for. There are no guarantees that all can be satisfied by any single course of action, but the church seeks to build its ethical judgements on a thorough engagement with evidence – including evidence from different vantage points. This paper seeks, however inadequately, to do just that.”

Unfortunately the word “inadequately” seems very appropriate to describe the “engagement with the evidence” in this paper. It calls on each side to hear each other but there is little evidence that the briefing paper author, the Bishop of Salisbury, has made an attempt to understand the anti fracking case.

There are indeed different vantage points between pro and anti frackers and to a considerable degree the differences do emerge from these. After a while many people involved in the anti fracking movement have come to recognise that when pro and anti frackers make their arguments they are talking and writing about different things. The different statements about issues are not only that communities and the industry have different moral and ethical values – there are also different conceptual framings of what “fracking” means. Unfortunately despite its aspiration the Church paper has failed to notice or discuss these contrasting framings. It has only noticed that of the industry and government. Let me give some examples.

Vantage point differences that the Church of England Paper has not noticed

When pro-frackers talk about “fracking” they typically have a narrow technical understanding derived from the oil and gas industry of what is alternatively termed “well stimulation”. This is a narrow understanding of an engineering process where the reservoir rock, a impervious geological strata underground, is comprehensively fractured to create an artificial porosity in which oil or gas flows into the well and thus up to the surface.

By contrast when anti frackers speak or write the word “fracking” they mean ALL the activities and installations associated with the development of an unconventional gas field – so that includes silica sand mining and processing, pipelines, compressor stations, pigging stations, dehydrators, processing plants, rail and road tankers, flare stacks, truck unloading facilities, storage depots through which gas is moved, filtered, pressurized, stored, and vented. Drill rigs, pumps, generators, injection wells and recycling facilities for liquid waste. Many of these installations and associated

activities fail, leak, spill, have accidents and malfunction.

It is important to get this. Let me illustrate why with the problem of water contamination. When pro-frackers claim there are no cases of fracking contaminating water and anti frackers claim that there are – then they are mostly talking from a different understanding of what the word “fracking” means. In the narrow definition of the industry there are actually some cases of water contamination by fracking but very few (in the USA). However anti frackers are mostly arguing about contamination arising in a larger variety of circumstances like failing well integrity or multiple surface spills including leaks from pipelines. There is an abundance of evidence for those.

Between 2009 and the end of 2015 a peer reviewed review of the peer reviewed literature on the environmental and public health consequences of fracking identified 58 studies on water quality. 40 contained findings that indicate potential, positive association or actual evidence of water contamination while 15 studies which show minimum, rare or no incidents of water contamination. <http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0154164>

The point here is that how you frame the issues is crucial – adopt a narrow framing of “fracking” and there are far fewer problems visible. Adopt a wide framing and there is a much more serious picture. However the Church of England paper, while claiming to “reconcile conflicting viewpoints” has not really taken in what the anti viewpoint is about or noticed this crucial difference from the pro point of view.

Scale Differences

Another difference of “vantage points” between pro and anti frackers that the Church paper fails to notice is in the scale differences articulated in the conflicting viewpoints.

Conventional oil and gas wells tap porous reservoir rock – which means that the oil and gas can flow underground towards the well across a wider area. This is not the case in an unconventional oil or gas field where the oil and gas is trapped in non porous rock. The reservoir rock has to be threaded with multiple horizontal wells and the porosity is then created by fracking outward from the network of wells. For that reason the unconventional operation involves many more wells for an equivalent oil or gas return – perhaps up to 100 times as many. There are more wells, more pipes, more drilling, more HGVs, more noise, more risks, and more costs – financial and non financial – to extract a given amount of recovered energy.

Yet when the pro-frackers put their case they typically present the issues in terms of the risks of single wells, the amount of water taken by a single frack, the surface area taken by a single well pad with its multiple wells. Here's an example that is right on the first page of the oft quoted Royal Society Royal Academy of Engineering report.

“The probability of well failure is low for a single well if it is designed, constructed and abandoned according to best practice.” Royal Society/Royal Academy of Engineering Report

But this statement is almost tautological and completely misses the point. You cannot develop shale oil or gas from a single well – you have to have hundreds or thousands of them for the process to have any chance of being economically viable.



If each of the well pads visible in this gasfield originate 10 wells then we are looking here at the surface evidence of 5,000 wells. Now assume a failure rate + spills for just 5% of the wells and we would be looking at an area where there would have been 250 incidents.

Suddenly it is not surprising that, for example, in the Bakken, in North Dakota, a recent study found widespread soil and water contamination of the sort that is likely to be persistent and not easy to clear up. <https://nicholas.duke.edu/about/news/ContaminationinNDlinkedtoFrackingSpills>

Air contamination and scale

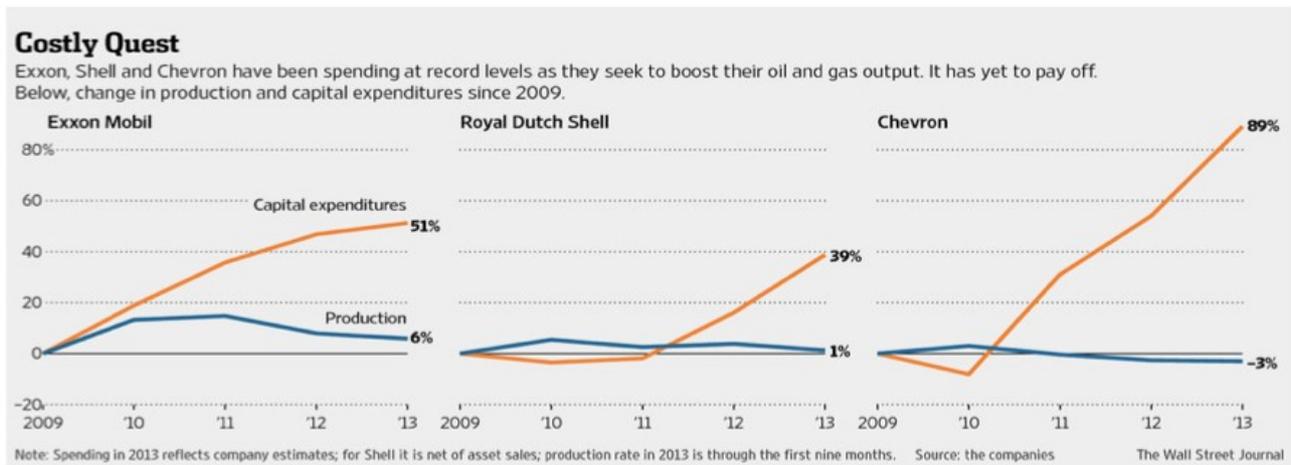
A similar thing can be said about atmospheric contamination risks. Once again the issue of scale is vital to understand and that includes as regards the effectiveness of regulation. Thus, for example, in north east Colorado where there are high levels of air pollutants, including benzene, a study by the University of Colorado noted that tighter regulations have not resulted in lower air pollution levels. "Even though the volume of emissions per well may be decreasing, the rapid and continuing increase in the number of wells may potentially negate any real improvement to air quality" (Thompson C. R., Hueber J., & Helmig D. (2014). Influence of oil and gas emissions on ambient atmospheric non-methane hydrocarbons in residential areas of Northeastern Colorado. *Elementa: Science of the Anthropocene*, 2. doi: 10.12952/journal.elementa.000035)

These form an important part of the background to why the Shonkoff and Hays review of peer reviewed articles between 2009 and the end of 2015 found that of 46 studies of air quality 40 contained findings of elevated air pollutant emissions and/or atmospheric concentration. This is 87% of the studies.

Ethics, Economics and Sub Prime Shale Debt (aka "toxic trash")

The issue of scale is also important to a proper understanding many of the other issues. As already explained unconventional gas extraction requires more engineering, more wells, longer wells, more surface activity including more transport. It uses more energy and, what's more, the wells deplete more rapidly. All of these things not only lead to more pollution they also cost more money per amount of oil or gas extracted. As conventional wells deplete they too become more expensive to find and to tap – eg under a great deal of rock, in deep sea or Arctic locations.

In other words the oil and gas industry is using more and more capital expenditure but is getting out less and less. That is what depletion means.



<http://www.feasta.org/2017/01/22/end-of-the-oilocene-the-demise-of-the-global-oil-industry-and-of-the-global-economic-system-as-we-know-it/>

Unfortunately for the oil and gas industry it cannot just keep pushing up the price which it charges for its production as it becomes more expensive to get out of the ground. Because oil, but also natural gas, are so fundamental to all developed economy activities a continually rising price has a macro-economic impact. When energy prices remain too high for too long people and companies initially cope by taking on more debt – but this solution delays the problem in the present by making it worse in the future. Eventually economic growth sags – and "solutions" like central banks reducing interest rates to virtually zero stop working. The economy edges towards a crash. Among other things this means that oil and gas prices crash down to and then remain too low for the industry to cover their costs.

Despite the fact that the Archbishop of Canterbury was an oil company executive the Church of England has not recognised this – though to be fair – neither has the government – nor many economists. Yet this dilemma for the oil and gas industry is important to understand. Otherwise one cannot properly evaluate a number of issues raised in the Church of England paper like *affordability, employment, tax gains and energy security* too. In the USA the fracking sector did not make any money between 2009 and today – a fact that can be verified by looking at the figures. (See table next page)

I will turn to the UK situation shortly but before that it is worth asking how it is possible that an industry can go on for so long getting credit to fund its capital expenditure via Wall Street and yet not make any money. The answer is an interesting lesson financial ethics, or the lack of them.

It will be remembered that before the crash of 2007 the US finance sector had lent huge amounts of money to people with no income, no assets and no jobs. They were called "liars loans" because

those involved knew, or should have known, that they could not be repaid. However the people setting up the loans knew too that the mortgage loans would be packaged up and sold on so other people would take the risk – or the near certainty of loss. The Wall Street financial institutions and their staff got a fee for all the loans made while other suckers on the other side of the world like people whose pension funds took over the risk by investing in securities that were privately referred to as "toxic trash".

Table 4: Operating Cash Flow Surplus (Deficit) (\$million)

July 22, 2015

		2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Large Cap E&P													
Anadarko	APC	12	(1,622)	81	1,792	(1,943)	(755)	371	(1,225)	(1,083)	(939)	(2,074)	(2,799)
Apache	APA	1,207	1,182	1,120	(1,023)	1,867	1,754	2,948	(744)	(1,841)	(4,120)	45	270
Cabot Oil & Gas	COG	(112)	(109)	(124)	(846)	(45)	(414)	(315)	(189)	(124)	(229)	(211)	(48)
Chesapeake	CHK	(8)	295	(911)	(1,317)	(3,245)	(8,698)	(9,383)	(11,562)	(3,099)	(2,278)	(2,021)	(2,747)
ConocoPhillips	COP	8,273	9,386	8,069	9,350	578	5,060	(437)	(2,852)	(6,201)	(3,798)	(5,859)	(3,556)
Devon	DVN	1,579	467	(100)	(1,693)	(1,143)	(1,391)	(2,082)	(4,047)	(1,680)	(1,312)	(841)	(2,142)
EOG Resources	EOG	493	(408)	(1,077)	(1,202)	(704)	(2,862)	(2,746)	(2,138)	(216)	(403)	(1,631)	(1,133)
Hess	HES	360	(373)	282	179	(35)	(939)	(2,476)	(3,570)	(2,023)	(1,249)	(2,288)	(1,295)
Marathon Oil	MRO	1,145	2,576	918	(169)	(2,526)	(566)	(2,514)	(1,183)	181	(975)	(1,493)	(1,171)
Murphy	MUR	(68)	(223)	(1,028)	165	(647)	(373)	(469)	(2,154)	(1,369)	(1,377)	(1,461)	(1,193)
Noble Energy	NBL	375	306	258	196	140	(445)	(948)	(1,142)	(1,450)	(2,186)	(1,040)	(743)
Occidental	OXY	2,506	2,821	2,932	4,650	1,831	2,984	3,066	(85)	1,688	(4,055)	(2,978)	(2,391)
Pioneer	PXD	(563)	(580)	(781)	(183)	317	(188)	(739)	(1,404)	(813)	(1,033)	(624)	(661)
Range Resources	RRC	47	(94)	(171)	(121)	(125)	(601)	(821)	(1,040)	(444)	(462)	(107)	(193)
Southwestern Energy	SWN	(199)	(614)	(1,066)	(702)	(395)	(546)	(456)	(496)	(272)	(194)	(200)	(171)
		15,046	13,010	8,403	9,075	(6,074)	(7,980)	(17,003)	(33,830)	(18,745)	(24,610)	(22,784)	(19,974)

Source: Company data and Oppenheimer & Co. Inc. estimates.

<https://srsroccoreport.com/u-s-shale-gas-industry-countdown-to-disaster/>

Now we have another industry from which Wall Street has earned large fees organising loans – and once again an apt description would be a process of investing in "toxic trash". In this case the toxic trash is of a double character – pollutants and environment harms and financial toxic trash too – capital raised to be spent on an industry that year after year has made no money. There is a little matter of ethics involved here and perhaps the Church of England ought to open their eyes to it. See my article at <http://www.credoeconomics.com/shale-euphoria-the-boom-and-bust-of-sub-prime-oil-and-natural-gas/>

The Economics of UK Shale – An industry that makes a loss pays no taxes...but would need subsidies

Now let us turn to the situation in the UK. The chances of a shale oil and/or gas industry covering the costs of extraction are also slim. It is an indicator of the desperation of the government and the industry that the dramatic depletion in the north sea has brought about that they have even considering investing in shale. As psychologist Daniel Kahneman explains people and institutions that are normally loath to risk anything nevertheless resort to a gamble when all their options otherwise seem very poor. That is the case at the moment for the UK oil and gas industry, as well as for petrochemicals. Yet for the foreseeable future there is little chance that a shale gas industry in the UK will be able to cover its costs of extraction. There are in fact a number of studies. Of course we do not know yet the cost of extraction for shale gas in the UK – but we have a number of studies with estimates. The Oxford Institute of Energy Studies estimates a break even of \$7.5 to 15.5 mmbtu. Another study by Rice University arrives at \$6 to 7 mmbtu. Eon about \$6 – 10 mmbtu and Centrica \$7 to 10 mmbtu. Yet the current natural gas price is about \$5 mmbtu. On the basis of those estimates the industry will lose money in the UK too....and there will certainly be little spare cash for spending on health and safety...

On that basis there would be NO tax take – and if the government was desperate enough to keep this industry going it would have to subsidise it instead. Nor would communities be getting any share of the profits because there would be no profits. Instead they would probably have to pay the bill for clearing up the mess after the companies as has happened, for example in Canada, when small oil and gas companies go bust leaving the local authorities to do the clearing up after them.

(This is to leave aside the fact that 40% of fracking licences in the UK are held by companies with significant offshore holdings – in other words operate out of tax havens.

<https://www.ft.com/content/021f2e68-a34a-11e5-8d70-42b68cfae6e4>)

Energy Security by promoting a bankrupt industry?

In fact if we look closer we discover that a number of the current UK exploration companies are teetering on the brink of bankruptcy. An example is I Gas. If the Bishop of Salisbury really thinks that British regulation is top class he should look at the Oil and Gas Authority as an example of a regulator. It is supposed to be the regulator for the financial affairs of exploration and development companies who are awarded exploration and development licences. It is supposed to assess whether the companies have the financial capacity to do what they say they are going to do and that they are financially viable. Yet the OGA have let I gas get away with failure to meet their financial viability criteria for year after year after year. One criteria – gross gearing of 75% or less - was failed on 31 March 2012; 31st March 2013; 31st December 2013; 31st March 2014; 30th June 2016. Another criteria – interest cover of 2 or more was failed on 31 March 2012; 31st March 2013; 31st December 2013; 31st March 2014; 31st March 2015; 30th September 2015; 31st December 2015; and 30th June 2016. (Research by Simon Gledhill – personal communication)

This is also one way of judging the “energy security” argument. What kind of “security” is it that relies heavily on an industry that is piling up debts that are financially fragile and that is unlikely to make a profit?

Climate Change – giving the Committee on Climate Change an easy ride

In this critique of the Church of England paper I will follow its separation of the issue of climate change as a topic in its own right and argue that if the Church are to claim to be doing an ethical evaluation of the issues they should have asked much tougher questions than they have done. If the ethical issues are important then one has an obligation to really look into the issues in depth. In my view they have not done that.

In fact the briefing paper is persuaded by the arguments and ideas of the governments advisers, the Committee on Climate Change. Briefing paper is impressed by their recent report on fracking and recommends it “as a good example of a balanced and well informed analysis of risk, mitigations and strategic issues involved in fracking.”

I disagree.

The Committee on Climate Change (CCC) argued that the development of shale gas in the UK would not be compatible with Britain's climate commitments unless three key tests are fulfilled – on gas consumption, methane leakage and keeping to carbon budgets. The government rushed to claim that all three tests could be met. The Church paper does not go so far as to endorse that view. It leaves the question open.

“If it is concluded that shale gas is compatible with reducing carbon consumption in this way, and

that the points outlined above are met, then the case for fracking, as the process by which shale gas is extracted, becomes stronger.”

Well, fair enough for leaving the question open – but when such a lot is at stake merely to present the issues by presenting the view of the CCC and government and waiting to see is not adequate. If you are making an ethical judgement that is as important as this then one should interrogate the issues in depth.

For example, the Committee on Climate Change is intent on meeting Britain's carbon budgets. One of the ways that the CCC suggests that these budgets might be accommodated while at the same time increasing domestic shale gas production is mentioned in the C of E paper “The production of UK shale gas must displace imports, rather than increase gas consumption”.

The problem with displacing imports

It amazes me that neither the CCC nor the Church of England have noticed the problem with this. The UK does not have the power to prevent the gas that was being imported from being rerouted and sold elsewhere in the global economy.

In the last few years gas displaced coal in US power stations – it was claimed that this was reducing US emissions. But the US coal industry kept producing and sold the cheap coal in Europe where carbon emission rose as a result.

What makes it more surprising that this problem has not been addressed is that the DECCs own advisers, the late David McKay and Timothy Stone, referred to the use of displaced fossil fuels in their evaluation of shale gas. The CoE paper cites McKay and Stone as a reference too. Pro-frackers love to cherry pick the pieces that they like from McKay and Stone report but there is something in McKay and Stone's conclusions that they leave out.

“The production of shale gas could increase global cumulative GHG emissions if the fossil fuels displaced by shale gas are used elsewhere. This potential issue is not specific to shale gas and would apply to the exploitation of any new fossil fuel reserve.” And “The view of the authors is that without global climate policies..... new fossil fuel exploitation is likely to lead to an increase in cumulative carbon emissions and the risk of climate change.”

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/237330/MacKay_Stone_shale_study_report_09092013.pdf

So the problem here cannot be left as an issue of the UK's carbon budget. It has to take into account whether global climate policies are tight enough to prevent the use of displaced imports somewhere else in the world. Any honest ans that will answer to that will surely admit that they are not.

That leads to an entirely different way of framing the issues – one which many people in the anti fracking movement embrace but not the government, not the committee on climate change and apparently not the Church of England either.

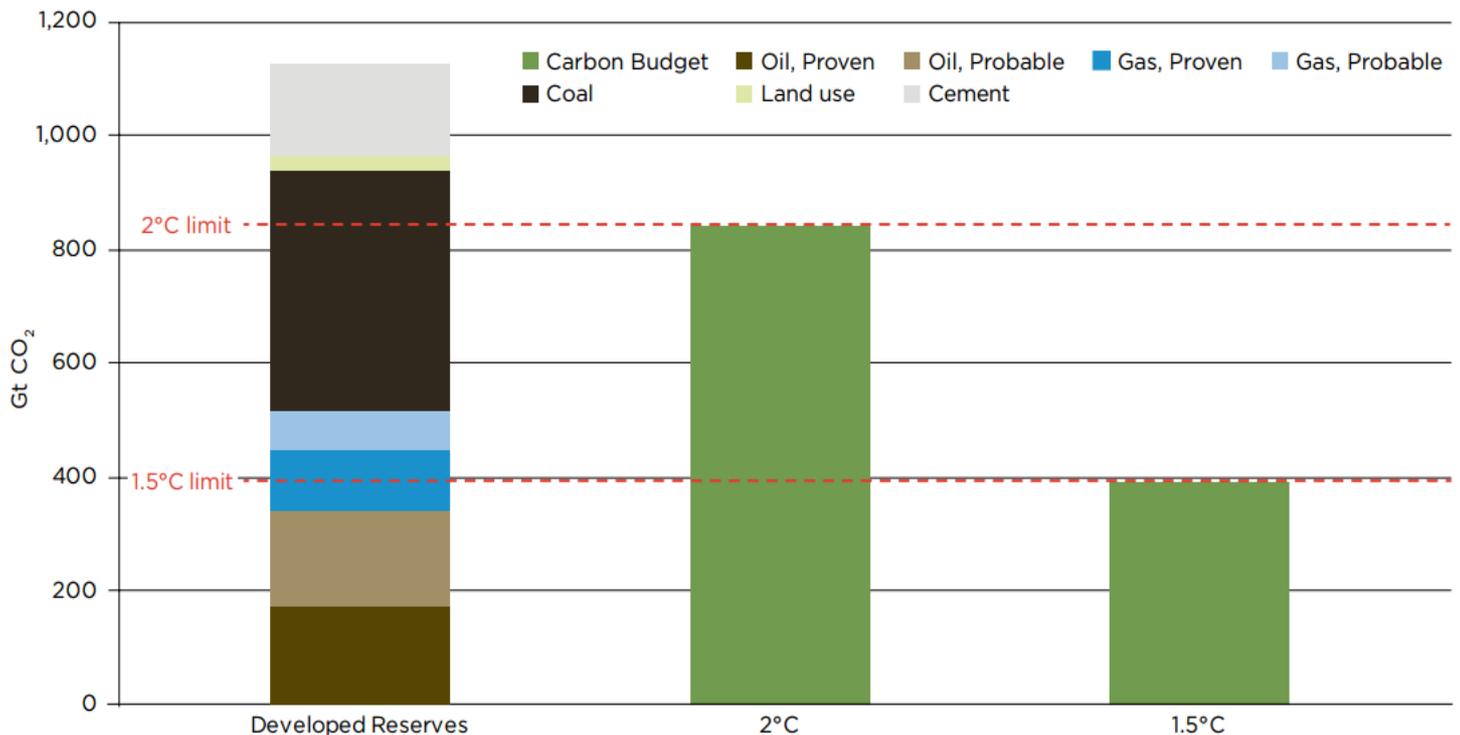
That different approach is an argument for “**Keeping it in the ground.**”

Keeping it in the ground – a global response

Perhaps the Church of England authors are unaware of this – perhaps because they rely too much on official narratives that have been co-opted by the oil and gas industry. However, if they actually

read the critics of the industry and tried to make themselves aware of the other side of arguments they would discover that the already developed oil, gas and coal mines in the world contain enough carbon in them so that, if these already developed resources are fully exploited, the world will shoot over a 1.5 degrees and 2 degrees C temperature increase. That means ANY development of NEW fossil fuel capacity will make the existing situation even worse. That's because it will be difficult to prevent already developed capacity continuing to produce and, as I have suggested above, merely re-routing their production elsewhere if they are displaced by domestic shale gas.

Figure ES-1: Emissions from Developed Fossil Fuel Reserves, Plus Projected Land Use and Cement Manufacture



Sources: Rystad Energy, International Energy Agency (IEA), World Energy Council, Intergovernmental Panel on Climate Change (IPCC)

Graph taken from “The Sky's the Limit. Why the Paris Climate Goals require a managed decline of fossil fuel production” Oil Change International. September 2016

http://priceofoil.org/content/uploads/2016/09/OCI_the_skys_limit_2016_FINAL_2.pdf

Abating Fugitive Emissions is not straightforward – abating them all virtually impossible

Now let us turn to a related issue where, once again, the Church of England paper approaches the issues with too little attention to detail and too superficially – thereby treating the official narrative to inadequate scrutiny. This is the issue of fugitive emissions. If too much methane leaks it will be seriously bad for the climate because methane is such a powerful greenhouse gas.

On this the C of E paper is again content to accept the Climate Change Committee's framing of the issues. By all means leave the question of leaking gasfields and gas installations as an open question to be determined later. But what are the questions that will need to be asked?

When you are making an ethical judgement on such an important issue then the very least that one should expect is that the authors do a google search with such terms as “potential for abatement of fugitive methane emissions”. If the authors of the paper had done this then what they would have found?

Here are a few things that we do not find in the C of E paper based on the US experience, which is currently what we mostly have to go on. It was not difficult for me to find all of this and a Bishop should be able to find it too.

Firstly, while there are many possibilities to reduce fugitive methane emissions, there are technical and economic constraints on what proportion of emissions are likely to be reduced whatever the regulatory regime is. To bring emissions down to zero would be hugely expensive and require absolutely massive regulatory oversight. No one who has taken the trouble to look into the issues (ie not the C of E) realistically expects that. So what level of emissions reduction is considered economically and technically feasible in US conditions? The answer is about 40%.

Table 1. Summary of projected major methane (CH₄) emission abatement opportunities across the natural gas, oil, and coal supply chain.¹² Data assumes the 100-year methane GWP of 25 (IPCC 2007). Opportunities map to more detailed data by "emission source category", shown in Table A-1 in Appendix A.

Sector	Supply Chain Segment	Total Emissions	Total Abatement Potential	Abatement Potential at Less than Net Zero Cost	
		MMt CO ₂ e/yr	MMt CO ₂ e/yr	Partial Revenue Scenario	Full Revenue Scenario
Natural Gas (NG)	Production	50	20	6.3	6.3
	Gathering and Boosting	20	7.2	5.0	5.0
	Processing	20	12	9.7	9.7
	Transmission	35	21	0.0	17
	Storage	7.5	3.1	2.9	2.9
	LNG Import/ Export	2.5	0.8	0.7	0.7
	Distribution	33	3.4	0.0	0.0
	Subtotal: Downstream of Production	120	47	18	35
	Total	170	67	25	41
Oil	Production	50	19	5.9	5.9
Coal	Production	72	37	2.3	2.3
NG, Oil and Coal	Total	290	120	33	49

Sources: ICF 2014^{13 14}; EPA 2013b

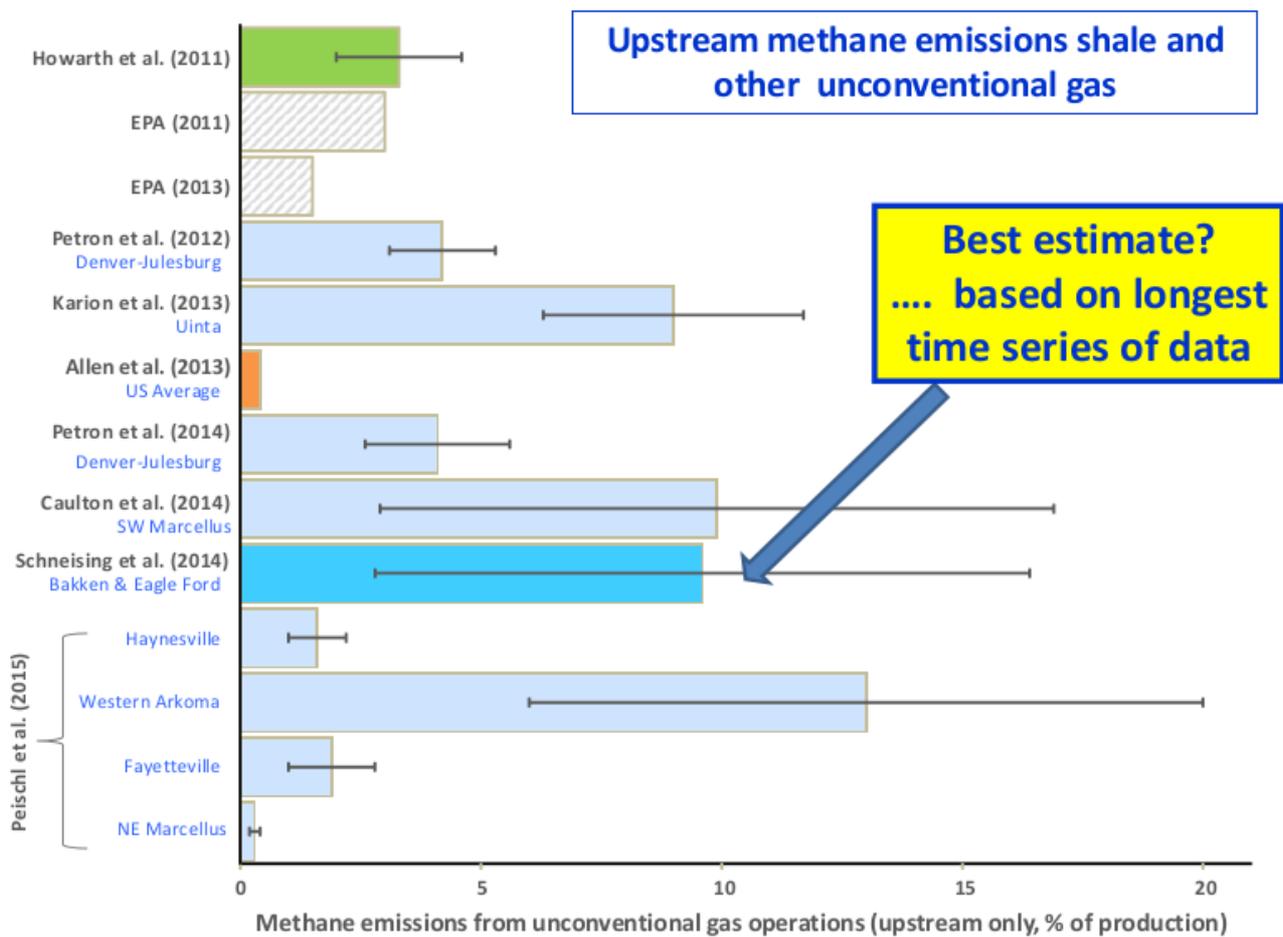
Secondly, while it is true that some of the leaks that are prevented would lead to gas being available to be sold – however the revenue benefits of preventing leaks exceeds the costs of preventing leaks over only a part of the problem. And the problem is hugely complicated both by the number of different kinds of leaks, at different parts of the production and distribution network, and in a way that makes identifying where the leaks are occurring difficult to do. While the government makes great store by green completions there are problems of emissions before and after these well completion exercises occur. You get no sense of this complexity from the UK governments documents that celebrate and oversell the competence of the Environment Agency and HSE – and you do not get a proper sense of the complexity to be resolved in the Church of Englands presentation either.

Thus, for example, it has been found that significant emissions may occur in exploratory drilling long before completions occur. Thus a 2014 peer reviewed article by Robert Howarth, “A Bridge to Nowhere” in the journal “Energy Science and Engineering” refers to

“ the recent Pennsylvania study, which quantified fluxes from discrete locations on the ground by mapping methane plumes from an airplane, found very high emissions from many wells that were still being drilled, had not yet reached the shale formation, and had not yet been hydraulically fractured. These wells represented only 1% of the wells in the area but were responsible for 6–9% of the regional methane flux from all sources.”

Again it will take a lot of monitoring to identify “super emitting” gas installations and the government's regulators to do this monitoring have been cut and are already overstretched.
<https://insideclimatenews.org/news/07042016/big-methane-leaks->

Thirdly, if it is true that only a portion of the methane will be abated – let's guess and generously say 60% - then how big will be the problem before the abatement. If the US experience is anything to go by it could be over 10% of gas production. This is a diagram that shows the upstream production estimates of gas leakage – it does not include downstream gas leakages (ie from gas distribution installations and pipes).



The point about the Schneising study showing a nearly 10% loss is that it is based on satellite data. However cynics will not find it difficult to guess which study on this graph is the favourite of the UK gas industry and government. Obviously it is the Allen et al study of 2013. Allen et al was very influential in the evaluation of DECC Advisers McKay and Stone.

Unfortunately for the UK government and the gas industry the data for the Allen et al study was acquired from a tiny self selecting sample of gas companies – not a representative sample. Even worse the study used gas testing equipment that has since been shown to be faulty.

<http://onlinelibrary.wiley.com/doi/10.1002/ese3.81/abstract>

So let's accept Schneising's figures of 10% of upstream production leaks and remember that some downstream leakage must be added too. Adopting an incredibly optimistic assumption that a 60% reduction could be achieved, when there is a more than 10% loss still leaves over 4% leakage overall which makes shale gas worse than coal in electric power generation. If that is what regulatory control would achieve it would not be good enough.

All of these issues could have been easily noticed using a google search by an informed lay person. THIS is the way the ethical question should have been posed - can the Committee on Climate Change find a way of resolving a situation with these characteristics? Compared to a sufficiently sharp interrogation of the issues the ethical question as posed in the Church of England paper is vague, limp and uninformative. It gives no feel for the dimensions and character of the practicalities that underpin the ethical questions. If this is an example of the judgement of a responsible steward for God's creation then God might question whether his steward is up to the job.

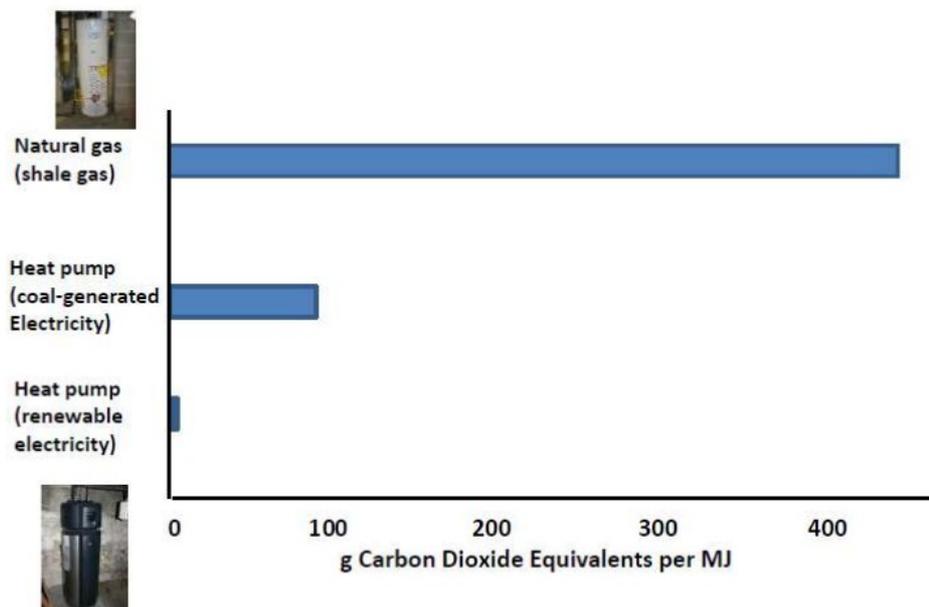
The point is that all over Britain and all over the world people are now doing their own research on these issues and they are coming up with a strikingly different story from the one in the official narrative which the Church of England embraces. But the Church of England paper shows little evidence of original research. Let me give another example – heating.

Heating Options and Greenhouse Gas

The briefing paper does not endorse shale gas for heating. Its another one of those questions that it leaves open having given a shallow statement of the non shale options for heating - like the installation of heat pumps.

But there is in depth research on this. Why did not the Church notice it? All they needed to do was a google search. If they had they would have noticed that in January 2016, an academic paper appeared in the USA whose message is a very strong argument for alternatives to shale gas for heating homes. Although based on US data its message is devastating for industry and government claims that shale should be a heat source for buildings.

Greenhouse gas footprint for heating domestic hot water



“Greenhouse gas emissions from domestic hot water: heat pumps compared to most commonly used systems” Bongghi Hong and Robert Howard **Energy Science and Engineering** January 2016

<http://onlinelibrary.wiley.com/doi/10.1002/ese3.112/full>

Regulation – Failure to do a proper literature review

According to the C of E paper “The UK has one of the most stringent onshore safety regimes in the world”.

Considering that there has only been one example of a high volume hydraulic fracking well in the UK, which failed, this is an extraordinary claim. It is a repeated meme of government and industry to say how marvellous British regulation is – but what is the evidence? If the Church of England authors had gone to the trouble of doing a literature review they would not have been able to be so confident. Clearly they did not.

There is in fact very little academic literature evaluating the regulatory system itself but material does exist. For example a peer reviewed paper by Hawkins was written to study and evaluate the regulatory issues relating to fracking in England.

Hawkins, J “Fracking: Minding the Gaps” can be found in the Environmental Law Review of 2015 Vol 17 (1) 8-21

<http://www.programmeofficers.co.uk/Cuadrilla/CoreDocuments/CD41/CD41.48.pdf>

What does Hawkins say? Well, she certainly does not give the ringing endorsement that you would expect from the Church of England paper.

‘Under the current regulatory system, the uncertainty and risk associated with fracking is not justifiable. The very way in which the risks have been assessed assumes that a ‘robust’ regulatory system will be in place; this has fed the justification for significant instances of regulatory inaction. Clearly the current regulation is not ‘robust’, and the framing of such risks as ‘low’ based on this assumption highlights the deficiencies in this cyclic determination’ and ‘maintenance of the current approach is beneficial in that it requires minimal effort and expenditure, whilst allowing the shale gas industry to develop. However, it risks allowing regulatory gaps to remain until problems materialise’ (p.18).

Another source is the “Rapid Evidence Assessment of Regulation and Regulatory Practices Involved in Fracking and its Public Health Impacts” from Andrew Watterson and William Dinan of the University of Stirling which can be found at

<http://www.regulatingScotland.org/report/frackingandregulation.pdf>

The Watterson and Dinan review looks critically in a way that the Church of England does not at the Royal Society and Royal Academy of Engineering Reports and that of Public Health England.

The first had no public health experts involved, is now somewhat dated in view of a flood of papers, particularly after 2013, and many of participants had clear conflicts of interest. As Watterson and Dinan explain

“The review panel chair had worked in the energy industry and has since had a range of private and public sector roles. Perceived conflicts of interests exist. The Working Group contained eight members: one had worked for BP, one member ran a commercial consultancy, one worked as an advisor for an engineering company, one chaired a company with interests in underground gas

storage, one had acted as a consultant on shale gas via an Energy company, one had acted as a consultant for several companies including Cluff with interests in underground coal gasification, and one was a director of Cluff.”

On the Public Health England Report Watterson and Dinan point out that it was limited in its scope to chemical and radioactivity pollution and did not examine climate change and greenhouse gas emissions, sustainable use of water resources, nuisance issues, traffic (apart from vehicle exhaust emissions), occupational health, visual impact and the socio-economic benefits and impacts of shale gas extraction. The PHE reviewers considered that the literature on fracking revealed the reported problems were typically a result of operational failure and a poor regulatory environment. However, according to Watterson and Dinan “It is unclear who made that judgement, who reviewed it and what independent evidence exists to test and/or support it.”

“The question of cumulative impacts of many wells in relatively small areas is mentioned in the review. However, there does not appear to have been any consideration of the need for cumulative health impact assessments or the use of methods such as the exposome to inform not just regulation and monitoring of industry practice, but also the wider question of the introduction of fracking at all in areas of high population concentration, previously high industrial pollution levels, currently high industrial pollution levels, vulnerable populations and environmental justice challenges.”

It is important to note that the PHE report was also criticised in an editorial in the British Medical Journal which said:

“...the report incorrectly assumes that many of the reported problems experienced in the US are the result of a poor regulatory environment. This position ignores many of the inherent risks of the industry that no amount of regulation can sufficiently remedy, such as well casing, cement failures and accidental spillage of waste water. There is no reason to believe that these problems would be any different in the UK and the report provides little evidence to the contrary...” (April 2014)

Another source of information on the regulatory regime and its inadequacies are available from Mike Hill, an engineer who was a contributor to the Royal Society, Royal Academy of Engineering report. Since he has separately produced a detailed lengthy critique of the Church of England Report I shall not comment further here except to note that Hill explains the RS/RSA published 10 recommendations to ensure safety but only one of these has been implemented. His detailed report of the Church paper can be found here:

http://media.wix.com/ugd/b0aabf_5902a55b06fd4338a56db38dd8687240.pdf

Features of the Regulatory Regime

Anyone involved in the anti fracking movement for any length of time will have heard the argument that Britain has the best regulatory regime in the world over and over and over again ad nauseum. In consequence anti frackers have built up a critique of the regulatory system that if the Church of England had been really interested in knowing they would have find out relatively easily. The fact that they make no reference to multiple criticisms shows how little interest they really have had in investigating the contrary point of view. In a nutshell the argument that they ignored is that the British regulatory system has the following features and assumptions:

1. An assumption that people and companies will stick to the rules and equipment will work properly – yet experience have proved otherwise. All the exploratory shale gas wells drilled by Cuadrilla in Lancs had some technical difficulty. In addition to 10 breaches of planning conditions there were 5 examples of drilling problems, three reprimands, as well as accusations of well integrity failure, trespass and damage and several cases where it wasn't clear whether or not

Cuadrilla had broken regulations. Or again Rathlin Energy exploratory well North of Hull breached 14 permit conditions between early July and mid October 2014 of the same year.

2. The main issues will be sorted out at the permitting and planning permission application phase – thereafter for most purposes there is “self regulation”. If problems identified by local people they must fight for action. For example, the so called “Independent Well Examiner” is paid for by the operator and uses data provided by the company in a desk based exercise.

3. The Environment Agency permitting process accepts “risk assessments” written for operators by consultancies which are highly questionable. The supposedly “independent” consultancies have a business interest in playing down risks to get more work later. They use an unfalsifiable and unprovable way of rating risks which is not based on peer reviewed science but on the subjective judgement of their staff. Their role is analogous to financial sector “rating agencies” whose judgement misled people into buying assets that were privately judged to be “toxic trash”. Risks assessed are not of whole processes but only of parts of processes– and are not aggregated...

4. Local Planners are required to assume that the Environment Agency and Health and Safety Executive will make the operation safe when experience in Yorkshire and Lancashire has shown that not to be true.

5. Salami Slicing of issues – it not possible to regulate or make planning decisions at the relevant scale – only at individual well/well pad or installation level. The relevant scale is the gas field – but it is not possible to take a decision whether or not the community wishes to see a gasfield develop, all decisions are about individual wells. That has profound implications because, as already argued, it is not the same to decide on one well with a 5% risk of failure as on 5,000 wells in which 250 wells might fail.

As John Ashton, a former climate diplomat and negotiator who has joined the anti fracking movement explains in the Guardian “Fracking at scale has a large footprint. It would threaten the fabric of our communities and countryside, woven over centuries. Maybe that is why industry and government have been at pains to ensure that the planning process considers each application in isolation from all the others. Each step in the journey can be discussed but the destination is off limits.”

6. Local concerns considered in planning are “trumped” by alleged national benefits – far from the issues being weighed up in a planning system where stakeholders are given equal weight – the gas industry is supposed to be given preference by a national planning policy guidance whereby “great weight” must be given to the alleged benefits of maximum economic development of hydrocarbons. It is therefore misleading to claim, as the Church of England paper does, that “fracking is treated in the planning system as any other kind of development”.

7. Definitions (eg of fracking itself) are manipulative, deceptive and deceitful – for example, the Infrastructure Act defines “fracking” as involving more than 10,000 cubic metres of water. This means that under the new UK law almost a half of the gas wells and nearly 90% of the oil wells which were hydraulically fractured in the USA over the decade 2000- 2010 would not have been classified as “fracked”.

According to the Church of England paper “The planning process is the formal process by which the range of stakeholder views, including those of local churches and communities are heard”.

Given the experience of many communities – eg in Lancashire and Yorkshire - many would want to add in here - “and then overruled by the Secretary of State if their views sway a local council to refuse planning permission and are not what the government wants to hear.”

In conclusion – superficial ethics based on impressions

Where are so many of these issues not properly discussed in the Church of England Report? You can't find them. The official narrative has been let off the hook because the Church of England, just like the gas industry itself and all the public agencies tasked with regulating the industry, have ASSUMED that regulation will keep us safe. This is hubristic. It never considers the contrary view that some processes have characteristics that preclude ever achieving an acceptable level of risk no matter how much regulation there is.

Whoever wrote this paper did little research into counter arguments. I do not know why. However millions of people have been persuaded by those counter arguments so it cannot be that the counter arguments and evidence are hidden or hard to find. There are many organisations that could have been contacted to get the alternative point of view and lots of academics and peer reviewed academic articles that could have been consulted. The fact that the Briefing Paper does not refer to these alternative sources is telling. It suggests that the authors of the paper did not actually consciously seek out and try to understand the alternative viewpoint before they made their “ethical” and “theological judgement”.

Ethics is probably at its most important where there are conflicts of interest, where individuals and communities and businesses must decide how to act in situations that are inconvenient, raise awkward and uncertain issues and where there is an asymmetry of costs, harms, rewards and benefits between different groups who have very different levels of political influence and power. Such conditions include conflicts between the interests of different generations – in which we all have a special responsibility to protect children and unborn generations because they are not around to fight their corner

This “briefing paper” does not ask any awkward questions. It is cosy and naively trusting about the government and the industry. It seems that the Bishop of Salisbury and his fellow thinkers live in a world in which policy processes arise out of evidence and rational debate rather than behind the scenes well connectedness, lobbying and plain cronyism. One feels that he lives in an imaginary world in which regulations work as they should, everybody acts in good faith and nothing goes wrong. This is a fantasy and it is time the Church of England woke up, did some serious research and made much greater effort – especially if they expect to be taken seriously opining about ethics and ecological responsibility.

Brian Davey

Feasta and Frack Free Notts. This version 26th January 2017

The opinions expressed here are my own and should not necessarily be taken as the view of Feasta or of Frack Free Notts.

About myself. In 2013 I taught a module on “*Economics, Environment and Ethics*” for an MA course about “Religion and Ecology” at Dublin City University. My course material provided the basis for my book “Credo. Economic beliefs in a world in crisis” published by Feasta Books. In Credo I point out that economics was originally a branch of moral philosophy taught by people like St Thomas Aquinas. However economics evolved in a way that displaced mainstream religion and has itself become a quasi religion in which the “common good” has effectively become that which best promotes economic growth. Original sin has become scarcity and salvation is technology and growth which is seen as the precondition for solving all other social and environmental problems. In the face of problems such as unconventional gasfield development it is not surprising that the Church of England simply does not possess the concepts or the independence of from establishment thinking to resist a deeply destructive process. www.credoeconomics.com

