Fracking Briefing Paper – NJPN May 2017

Background

Fracking (using horizontal drilling and high pressure fracturing of shale rock) has been widely implemented in the USA in the last 10 years or so, as well as Canada and to a lesser extent other countries, as a means of exploiting oil and gas reserves entrapped within the structure of deep rock formations. Permission for exploratory drilling has been granted in two areas of northern Britain[1] with a view to establishing if commercial scale fracking could occur in the UK, and government licences[2] have been issued for extensive fracking in anticipation of the outcome.

The NJPN Environment Group published its first discussion paper about fracking in 2014, opening up the scientific debate to the light of the Gospel and Catholic Social Teaching[3]. This updating paper touches on some of the current evidence about the process, the uncertainties and the controversies surrounding it, and the protests and campaigns, before looking at the place of Christian insights and wisdom to help form a balanced judgement about the role of fracking in the UK.

The Technology

From a well pad the size of a football field drilling begins vertically and gradually rotates to horizontal between 5 and 6 km below ground. Each pad can have 10 verticals from each of which 4 laterals can spread out horizontally for several kilometres. Water, sand, and chemicals are injected down the well at enormously high pressures to fracture open the shale rock deep underground, releasing the gas. The sand keeps the fractures open; the chemicals act as lubricants and prevent bacterial contamination.

Industrial scale fracking would require an array of wellheads spread across the gas fields. The rock known as Bowland shale[4] has been identified as containing a substantial amount of gas. Only a proportion of this gas can be recovered with ranges quoted from 5-30%. In the USA 15 - 18%[5] would be typical, but the UK amount is unknown without test drilling; 10% is assumed in industry calculations. The Bowland shale extends across much of northern and central Britain. Once the drilling phase is completed at each well pad the drilling head is removed and a smaller production wellhead remains. The production life of a wellhead is generally measured in years, maybe up to 20, but not more.

---

[1] Lancashire – Roseacre Wood and Preston New Road, both near Blackpool; North Yorkshire - Kirby Misperton in Ryedale

[2] UK Oil and Gas https://www.ogauthority.co.uk/licensing-consents/licensing-rounds/onshore-licensing-rounds/#tabs (all web references were accessed on 28/3/17 unless otherwise stated)

[3] http://www.catholicsocialteaching.org.uk/

[4] https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/226874/BGS_DECC_BowlandShaleGasReport_MAIN_REPORT.pdf

[5] http://www.worldenergyoutlook.org/media/weowebsite/2012/goldenrules/WEO2012_GoldenRulesReport.pdf

In December 2013 a report commissioned by the Department of Energy and Climate Change (DECC) said more than half of the UK could provide suitable sites for fracking. The report shows that 100,000 sq km of land is available for drilling[6]. The British Geological Survey[7] estimates there may be 1,300 trillion cubic feet of shale gas present in the north of England alone.

The Companies

In the UK there are 15 British companies and 4 from overseas currently involved in "conventional" on-shore exploration or drilling and now moving into fracking[8]. The two best known are Cuadrilla[9] and Third Energy[10].

Cuadrilla is a privately owned company formed in 2007 based near Preston, Lancashire. It is mainly owned by a private equity company and an Australian specialist service provider to the energy, mining and infrastructure sector. Its own workers are also minority shareholders. Cuadrilla is undertaking the test drilling in Lancashire.

Third Energy, based in East Knapton, North Yorkshire, has had extensive on and off shore drilling operations for over 20 years, producing gas and generating electricity from it. They are sinking the first fracking test well in Kirby Misperton, near Pickering.

Why the Controversy?

Fracking projects in the UK have all been met with opposition. This has ranged from large demonstrations to extensive presentations before planning authorities (local and national) by both locally affected people and by experts in geology, climate change, regulation and safety, health, etc. as well as barristers with special expertise. Long-running picketing of the first fracking sites have led to arrests, delays and disruption to suppliers to the industry. People local to the fracking sites have joined forces with national organisations (e.g. Friends of the Earth[11]) to create effective opposition around all the different areas of controversy. Catholic J&P activists have joined protests at the test fracking sites.

It can be difficult to separate rhetoric from good quality independent assessments, and it's necessary to note the US experience does not automatically apply here. Geology, regulation, population distribution, economics and politics are all different. There are some issues for which there isn't any relevant evidence or experience. Conjecture can be projected as fact.

The main areas of controversy fall into four categories: technological concerns, the place of fracking in strategic planning, global stewardship, and politico-economic considerations.

---

[6] http://www.bbc.co.uk/news/business-25420552 (accessed 11/4/17)
[7] https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/226874/BGS_DECC_BowlandShaleGasReport_MAIN_REPORT.pdf
[8] http://www.frackingforgas.co.uk/uk-onshore-gas/
[9] https://cuadrillaresources.com/
[10] http://www.third-energy.com/
[11] https://www.foe.co.uk/campaigns/climate/issues/fracking_background_information_33157

Technological concerns

Water usage – a huge amount of clean fresh water is required for fracking. An Institute of Directors (IOD) report in 2013 "Getting shale gas working"[12] was sponsored by Cuadrilla, the lead company in the north-west drilling applications. It illustrated that 544,000 cubic meters of water is required to frack one well pad. This equates to 10,000 peoples' home use for a year; in Lancashire alone 100 times that would be needed for the number of well pads anticipated. If mains water is not available it would be trucked in, requiring 31,288 truck movements in the life of the well.

Waste – a significant amount of the water is returned as flowback waste (typically a third of the water used according to the IOD, although they quote a range of 15 – 75%). Unlike the USA it is not currently expected that toxic chemicals will be used in UK fracking[13], but the flowback will be contaminated with toxins from deep underground. These are likely to include arsenic, mercury, and naturally occurring radioactive material and will require disposal or decontamination. There is significant doubt about the capacity of treatment facilities in the UK[14] (which may only be able to cope with small amounts of waste e.g. from exploratory drilling only), and waste has to be trucked there. The alternative is some type of burial, but recent planning applications contain little information about proposed waste treatment and disposal. Shale gas exploration should not be permitted in areas where there is genuine risk to valuable drinking water resources located in groundwater.

Contamination – one of the chief risks of fracking is that flowback waste will cause contamination[15]. This could occur due to spillage on the surface, during transport, or through failure of the well casing as it passes through water aquifers near the surface. The only fracking well drilled in the UK prior to the recent planning approvals did suffer deformation of the well casing after earth tremors were triggered by the fracking, at which point fracking was suspended (in Preesall, Lancashire 2011[16]).

The dramatic film '*Gasland*' showcased some of the risks. In the UK the Environment Agency requires detailed pre-fracking measurements of water methane levels, and continued monitoring during and after fracking.

Compared to the USA, population density is much greater in many of the areas licensed for fracking in the UK potentially exposing much larger numbers of people to any mishap.

---

[12] https://www.igasplc.com/media/3067/iod-getting-shale-gas-working-main-report.pdf

[13] The DECC report "About shale gas and hydraulic fracturing (fracking)" Dec 2013 confirms only Polyacrylamide friction reducers (0.075%), commonly used in cosmetics and facial creams, has been used by Cuadrilla. Hydrochloric acid (0.125%), frequently found in swimming pools and used in developing drinking water wells and a biocide (0.005%) are also approved. The regulators have decided that operators must disclose the chemicals used well by well.

[14] Chartered Institute of Water and Environmental Management http://www.ciwem.org//wp-content/uploads/2016/04/CIWEM-response-EA-Onshore-sector-guidance.pdf

[15] https://royalsociety.org/topics-policy/projects/shale-gas-extraction/report/

[16] http://energydesk.greenpeace.org/2015/06/15/energy-files-cuadrillas-preese-hall-fracking-well-had-to-be-plugged-again-after-more-issues/

Seismic activity – fracking is expected to cause earth tremors, but the scientific consensus is that the nature and force of these are so low as to be largely undetectable in routine living[17]. Tremors can, however, have an adverse effect on well casing integrity, as above.

Visual impact, noise and traffic – producing and servicing a football field sized industrial development is not practicable amongst dense housing, so fracking necessarily has to take place in the countryside. The drilling phase typically lasting 12 to 24 months involves heavy diesel noise and large numbers of truck movements as discussed above. The production phase is relatively unobtrusive after the drilling rig has been removed, although the gas has to reach the gas mains by pipe or other means, which may have impacts.

Regulation – the Institute of Directors refers to gold standard regulations, but it is a meaningless term. The UK has a tradition of strong regulatory regimes. The government has indicated multiple agencies will be involved in developing and monitoring fracking using expertise from on and off-shore conventional gas exploration. There isn't, however, any expertise yet in UK fracking.
The government's chief scientific officer commissioned the Royal Society and Royal Academy of Engineering to produce recommendations to address the technical risks of fracking in 2012[18]. They concluded the risks could be satisfactorily managed providing 10 key recommendations were adopted, but most have not so far been enacted. The recommendations cover measures to (i)detect ground water contamination (ii)ensure well integrity (iii)mitigate induced seismicity (iv)detect potential leakages of gas (v)manage water in an integrated way (vi)manage environmental risks (vii)implement best practice for risk management, and the development of (viii)regulatory requirements for nationwide fracking (ix)co-ordination of the numerous regulatory bodies (x)cross-Research Council programmes of research into fracking including the public acceptability of the extraction and use of shale gas in the context of UK policies on climate change, energy and the wider economy.
The government's Climate Change Committee in June 2016[19] produced similar conditions as a pre-requisite for allowing fracking, to which the government responded it was confident all would be met. However, it is also stated government policy to ease the burden of regulation upon industry[20], and to reduce expenditure on regulation.
The Church of England produced a Briefing Paper in Dec 2016[21] that was widely headlined as endorsing fracking[22] [23]. It deals with similar considerations to this

---

[17] Shale gas extraction in the UK: a review of hydraulic fracturing June 2012 https://royalsociety.org/topics-policy/projects/shale-gas-extraction/report/
[18] https://royalsociety.org/~/media/policy/projects/shale-gas-extraction/2012-06-28-shale-gas.pdf
[19] Committee on Climate Change https://www.theccc.org.uk/publication/onshore-petroleum-the-compatibility-of-uk-onshore-petroleum-with-meeting-carbon-budgets/
[20] https://www.gov.uk/government/news/boosting-business-by-easing-health-and-safety-burden-84-of-rules-scrapped-or-improved
[21] https://www.churchofengland.org/media/3856131/shale-gas-and-fracking.pdf
[22] http://www.dailymail.co.uk/wires/reuters/article-4136874/Fracking-gets-conditional-endorsement-Church-England-advisers-Kemp.html
[23] http://www.thetimes.co.uk/article/fracking-is-acceptable-says-church-x6qps72lz

NJPN paper and its conclusions include: "the key to whether or not fracking is a morally acceptable practice turns on three points: the place of shale gas within a transitional energy policy committed to a low carbon economy; the adequacy and robustness of the regulatory regime under which it is conducted, and the robustness of local planning and decision-making processes". Regarding regulation they said they were "persuaded that a robust planning and regulatory regime could be constructed [but] these are aspects that will need constant vigilance". The similarity of emphasis on the importance of the regulatory regime is striking.

Health – Public Health England judged that exploratory fracking posed acceptable health risks, subject to appropriate regulation[24]. Their report did not address industrial scale fracking, which is obviously the intended extension of successful exploration.
In contrast the independent non-partisan public health charity Medact, comprising large numbers of health experts, looked at wide-scale fracking.[25] It is important to note that they conclude there are significant health risks both locally from the likes of contamination and diesel emissions, but also nationally and globally from the likely possible effects of fracking on climate change. They describe global warming as a pressing health emergency.

Strategic planning - UK energy strategy
Phasing out coal – coal produces the most CO2 emissions per Kw of energy yielded, so most commentators rightly favour its demise. There are, however, huge reserves of coal in the world and effective carbon capture and storage (CCS) might have created an argument as a useful transitional energy source for many years. However, as at October 2016 there were only 15 large scale CCS projects operating in the entire world, and the number of future viable projects is shrinking due to limited investment.[26] CCS is advancing but not yet scalable.
It is therefore UK Government policy to eliminate coal-fired power stations by 2025[27]. Coal accounted for just 9% of electricity generation in 2016, down from around 23% the year before. As a result greenhouse gas emissions are falling by an impressive amount – 6% in 2016.[28]

Energy security – concerns about energy security are often touted and are emotive, but are they valid? British North Sea gas and oil is forecast to decline. However we obtain the majority of our imported gas directly by pipeline from Norway's North Sea fields (and some via Belgium and the Netherlands).

---

[24] Review of the Potential Public Health Impacts of the Exposure to Chemical and Radioactive Pollutants as a result of Shale Gas Exploration 2013 https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/329744/PHE-CRCE-002_for_website_protected.pdf (accessed 28/3/17)
[25] https://www.medact.org/wp-content/uploads/2016/07/medact_shale-gas_WEB.pdf
[26] International Energy Authority: Twenty Years of CCS https://www.iea.org/publications/freepublications/publication/20YearsofCarbonCaptureandStorage_WEB.pdf
[27] https://www.gov.uk/government/news/government-announces-plans-to-close-coal-power-stations-by-2025
[28] https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/604327/2016_Provisional_emissions_statistics_one_page_summary.pdf

Geologically these are the same fields. The UK chose to exploit and sell its share more rapidly than Norway who now provide us with our North Sea gas. We also import a variable amount from the Middle East, as liquefied natural gas, mainly via Quatar.[29]
Russia does not directly supply the UK, although it is a major supplier to Eastern Europe and Centrica (British Gas) signed a small 6-year deal in 2015 with the UK arm of Russian Gazprom[30]. Supply interruptions in Eastern Europe may impact agreements in place for European countries to assist each other in the event of energy insecurity.
The UK government's own assessment of supply resilience indicates an ability to comfortably exceed peak demand for gas even in a variety of severely adverse scenarios.[31] Dated September 2016 the risk assessment is a good source of reliable information about gas imports and production, including the possible future role of unconventional gas production (i.e. fracking).
Gas is traded on several international markets. The price of our gas varies according to world prices despite nearly 50% being "home grown", produced in the UK.
(Natural gas by-products e.g. ethane are also used in industrial processes for the petro-chemical industry[32]. The industrial giant Ineos has commissioned eight tankers to bring liquefied ethane from fracking in the USA to its refinery in Grangemouth. Until test drilling is complete it will not be known if UK fracked gas contains significant amounts of ethane and other useable volatile compounds. This aspect of fracking is not further considered here, although petro-chemical feedstocks is a claimed benefit of UK based fracking (IOD report 2013)).

Present and future energy use – almost half of our electricity is now low carbon, (equal parts nuclear and renewables) which are rising, whilst coal use falls. Renewables were 15% of the total in 2013, 24% in 2016 and rising. Overall electricity use is down 12% since 1970, mainly due to more efficient lighting and appliances, and a dramatic 60% drop in manufacturing capability.
Electricity, however, is only a small proportion of overall UK energy use, which is still heavily dependent on fossil fuels: 84% of total energy.[33]

Climate Change act 2008[34] – the UK has led the world in setting targets to tackle climate change: to reduce carbon emissions by 80% by 2050 (compared to 1990); by 50% by 2020. We had hit 38% reduction in 2015, some due to better efficiency and the move away from coal. But some is due to the way emissions for manufactured goods are counted: emissions are counted where the goods are made and not in the UK where they are used. UK manufacturing industry has

[29] National Prevention Action Plan Gas 2016 https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/577696/UK_National_Preventive_Action_Plan_Gas_2016.pdf
[30] http://uk.reuters.com/article/uk-centrica-gas-deals-idUKKBN0NY1FH20150513 (accessed 11/4/17)
[31] https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/560125/UK_Risk_Assessment_Gas_BEIS_template_Final__4_.pdf
[32] http://www.ineos.com/inch-magazine/articles/issue-4/material-gain/
[33] https://www.gov.uk/government/collections/energy-trends
[34] http://www.legislation.gov.uk/ukpga/2008/27/contents

declined dramatically with the move to globalisation and outsourcing (e.g. to China and India). Aviation also is expanding but its emissions are not tallied. Parliament debates and approves regular carbon budgets for future years, similar to the more familiar financial budgets.
The 2008 act was supported with a Green Deal[35] to better insulate 7m homes from 2013. The scheme was a flop, abandoned in 2015 when only 15,000 deals had completed. The requirement for all new homes after 2016 to be carbon neutral has been dropped from regulations[36].

A road map to 80% reduction? – Natural Gas (from conventional and fracked origins) is often presented as a transitional fuel between "dirty" coal and low-carbon sustainable energy. Despite taking climate change seriously by issuing laws, budgets and targets, and signing up to the global aims of the Paris World Climate Summit in 2015, the Department for Business, Energy and Industrial strategy (BEIS) does not have a far-reaching plan to decarbonise Britain. The government's own Climate Change Committee concludes the existing plans will not meet our existing carbon budgets (the latest covering 2028-32), and that there are no credible plans to take the country on to 2050[37].
Other organisations, however, have published road maps that include detailed consumption and production modelling. One of the most credible for the UK is produced at the Centre for Alternative Technology (CAT)[38] entitled "Zero Carbon Britain – rethinking the future"[39]. Described by the chair of the parliamentary all-party climate change group as "essential reading for all MP's" it produces a detailed plan that does not require a return to stone-age living or the use of unproven technology (such as large-scale CCS). But it does need an immediate start, and involves massive shifts in how houses are heated (80% gas at present), transport is powered, and energy managed. Much more sustainably produced (and local) electricity and much less burning of fossil fuels is required. Radical change in land use is called for, from agriculture to forestry. Wastage, especially from poorly insulated housing stock, has to be addressed. The Climate Change Committee advocates much the same.

Global stewardship - world climate change
Fossil fuels – The reality of Climate Change was accepted by every country of the world in Paris in December 2015[40] [41]. Since Paris, scientists generally agree that most of the world's remaining fossil fuels need to stay in the ground unused if we are to stand any chance of restraining warming to 1.5degC.
To help avert catastrophic warming, Catholic institutions are *divesting* from fossil fuel companies and *investing* in renewable energy as part of their ethical

[35] https://www.gov.uk/green-deal-energy-saving-measures/overview
[36] House of Commons Briefing Paper 6678 27thApril 2016 Zero Carbon Homes researchbriefings.files.parliament.uk/documents/SN06678/SN06678.pdf
[37] Committee on Climate Change "UK climate action following the Paris Agreement" October 2016 https://www.theccc.org.uk/publication/uk-action-following-paris/
[38] http://www.cat.org.uk/index.html
[39] http://zerocarbonbritain.com/ http://zerocarbonbritain.com/images/pdfs/ZCBrtflo-res.pdf
[40] https://unfccc.int/resource/docs/2015/cop21/eng/l09r01.pdf
[41] https://ec.europa.eu/clima/policies/international/negotiations/paris_en

investment commitments, to respond to the Pope's Laudato Si'[42] encyclical and the COP21 statement of Catholic Bishops from all continents[43].
In Laudato Si' (para 165) the Pope specifically calls for the replacement of fossil fuels without delay. CAFOD's 2017 *Power to be* campaign[44] speaks up for local, renewable energy across the globe.

Fugitive emissions – this is a technical issue but with global rather than local ramifications. Natural gas is mostly methane, which if it escapes into the air is many times more potent than CO2 at causing global warming. Small amounts of methane released into the air have a big effect on world temperature (about 20 times greater than similar amounts of CO2). The amount of gas that escapes during production is dependent on excellent technique and monitoring, along with rapid effective action to stem so-called super-emitter wells. This is true for all gas producing wells. Escape rates of 1 – 2% are typical[45] and may completely negate the apparent carbon benefits of gas compared to coal. Gas also escapes during transmission and use[46].

Instead of, or as well as? – many arguments in favour of fracking pre-suppose the gas will be used instead of "dirtier" coal as a means of transitioning from high carbon coal to low carbon sustainable energy options. It is a matter of conjecture as to whether this will be true[25]. Markets are not set up to bring this about.
And as indicated above, escaping methane may make gas extraction as damaging to the climate as burning coal.

Solidarity – the poor, future generations – considered crucial by many people who contend that all decisions should be tested against whether they will leave the world a better more sustainable place for future generations across the planet.

Politico-economics - prosperity, democracy and ownership
Some of the issues go to the core of just decision-making and the place of subsidiarity.

Local democracy v. national interest – UK planning guidance generally does not enable wider national or global considerations to be taken into account when deciding a fracking application[47], although many presentations to local councils deciding fracking applications have sought to raise councillors' awareness of their responsibilities towards the common good. Wider considerations get

---

[42] http://catholicclimatemovement.global/text-of-encyclical-laudato-si-by-pope-francis/
[43] http://catholicclimatemovement.global/wp-content/uploads/2015/10/APPEAL-TO-COP-21engl-final-1.pdf
[44] http://cafod.org.uk/Campaign/Power-to-be/Energy-campaign
[45] National Oceanic and Atmospheric Administration, US Government Department of Commerce https://www.esrl.noaa.gov/gmd/publications/annual_meetings/2014/slides/35-140331-A.pdf
[46] Potential Greenhouse Gas Emissions Associated with Shale Gas Extraction and Use Sept 2013 https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/237330/MacKay_Stone_shale_study_report_09092013.pdf
[47] Department for Communities and Local Government Plain English Guide to the Planning System January 2015 https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/391694/Plain_English_guide_to_the_planning_system.pdf

decided (at least in theory) at the point the government steps in to over-ride local decision-making.
The University of Nottingham, which has been monitoring UK attitudes to shale gas exploration since 2012, said its latest polling in September 2016[48] showed that 41.1pc of those who knew what shale gas was were opposed to it, with only 37.3pc in favour. For the first time in the history of the survey more people are against than in favour of shale gas extraction. The NJPN would argue that neither local democracy nor the national interest is being served.

Public v. private ownership of natural resources –There are issues around who should own and who should benefit from the natural resources of the world? Indigenous peoples for example do not share our concept of ownership of nature.

Prosperity – the 2013 IOD report postulates six main benefits locally and nationally (*Getting Shale Gas Moving* p109ff). These include reducing imports (or the rising rate of imports) with a positive effect on balance of payments and energy security, a new source of tax revenues, and creating well-paid jobs in the industry and supply chain. Claimed environmental benefits are lower CO2 emissions than liquefied gas (LNG), the UK petro-chemical industry is more efficient then overseas industry, and natural gas could be used as fuel for transport.
In the light of the controversies already discussed our opinion is the claimed benefits are of dubious significance. Comparing unconventional gas with LNG does not seem relevant; better would be to compare it to renewable energy. Similar arguments apply to alternative fuel for transport. All new industries claim they will bring jobs and tax revenues, but there is a skills shortage in the drilling industry already, and parts of the IOD report argues against a burdensome tax regime. A vigorous renewables programme would also create jobs. The IOD uses scenarios that include extensive gas use right up to 2050, yet all serious commentators indicate massive reductions in fossil fuel use will be required for global warming to be contained.

Christian aspects

In common with all the major world faiths Christians have long held the gifts of creation to be precious, calling for respectful and responsible use. All Christians have a duty to till and care for the earth in response to the call in Genesis[49]. The current environmental crisis suggests we might have done too much tilling and not enough caring!

Catholic Social Teaching (CST) has a long tradition of informing and inspiring decision making in both every day and political life, again spanning all the traditions.

[48] http://www.nottingham.ac.uk/news/pressreleases/2016/october/support-for-fracking-is-at-an-all-time-low-says-new-survey.aspx
[49] Genesis 2:15

There are a few principles derived from CST that are particularly relevant to any discussion about fracking. The Pope's encyclical Laudato Si' (LS)[50], on care of our common home, is the most recent addition.

CST principles

Responsible stewardship – Pope Francis at his very first Mass as Pope highlighted the importance of stewardship: "Please, I would like to ask *all* those who have positions of responsibility in economic, political and social life, and *all* men and women of goodwill: Let us be protectors of Creation, protectors of God's plan inscribed in nature, protectors of one another and the environment. Be protectors of God's gifts!"

Transparent Decision Making – in the section of Laudato Si' headed 'Lines of Approach and Action' there is a clear requirement for transparency. "Environmental impact assessment should not come after drawing up of a business proposition or the proposal of a particular policy, plan or programme. It should be part of the process from the beginning, and be carried out in such a way which is interdisciplinary, transparent, and free of all economic or political pressure. It should be linked to a study of working conditions and possible effects on people's physical and mental health, on the local economy and on public safety" (LS 183). "In the face of possible risks to the environment which may affect the common good now and in the future decisions must be made based on a comparison of the risks and benefits foreseen for the various possible alternatives" (LS 184). This is especially when greater use of natural resources is at stake, or higher levels of emissions.

The Common Good – Pope John Paul II oversaw publication of the Catechism of the Catholic Church[51]. Speaking about care of the environment it says: "The common good requires respect of 'the universal destination of goods'. Animals, plants and inanimate goods are by nature destined for the common good of … humanity. Man's dominion granted by the Creator is not absolute, but limited by the quality of life of his neighbour." (para 2450 – 2456)

Inter-generational solidarity – Pope John Paul also flagged that our responsibilities extend to all generations, including those still to be born: "Man has specific responsibility towards the environment in which he lives, towards the creation which God has put at the service of his personal dignity, of his life, not only for the present but also for future generations" (Encyclical "*The Gospel of Life*", 1995)[52]

Personal life-style change; living simply – Pope Benedict was more passionate about care of the environment than generally recognised. Several books on the topic are published under his name, including "Ten Commandments for the

[50] http://w2.vatican.va/content/francesco/en/encyclicals/documents/papa-francesco_20150524_enciclica-laudato-si.html
[51] http://www.vatican.va/archive/ENG0015/_INDEX.HTM
[52] http://w2.vatican.va/content/john-paul-ii/en/encyclicals/documents/hf_jp-ii_enc_25031995_evangelium-vitae.html

Environment" (Ave Maria Press 2009)[53] which collects together some of his teaching. Here in a reply to a fellow priest he urges us to personal change: "It's not just a question of finding [technologies] that can prevent environmental harms, even if it is important to find alternative sources of energy and so on. But all this won't be enough if we ourselves don't find a new style of life, a discipline which is made up in part of renunciations…". And he continues by reiterating that the earth's bounty is for everyone: "… a discipline of recognition of others, to whom Creation belongs just as much as those of us who can make use of it more easily; a discipline of responsibility to the future for others and for ourselves. It's a question of responsibility before Our Lord who is our Judge, and as Judge our Redeemer, but nonetheless our Judge."

On ownership and economics - "An economic system centred on the god of money also needs to plunder nature to sustain the frenetic rhythm of consumption that is inherent to it. Brothers and sisters: creation is not a property, which we can dispose of at will; much less so is it the property of some, of a few: creation is a gift, it is a present, a wonderful gift that God has given us to take care of and to use for the benefit of all, always with respect and gratitude." (Pope Francis 28/10/14)

In **Laudato Si'** Pope Francis amplifies the call to *ecological conversion*. It has many sections pertinent to the issues arising from fracking. Here are just a few relevant quotes:

"St. Francis reminds us that our common home is like a sister with whom we share our life and a beautiful mother who opens her arms to embrace us" (LS 1)

"Climate change is a global problem with serious implications….one of the principal challenges facing humanity in our day. It's worst impact will probably be felt by developing countries in coming decades" (LS 25-26)

"The climate is a *common good*, belonging to all and meant for all. … The problem [of greenhouse gasses] is aggravated by a model of development based on the intensive use of fossil fuels." (LS 23)

"In…global society, where injustices abound and people are deprived of basic human rights, the principle of the common good becomes a summons to solidarity and a preferential option for the poorest of our brothers and sisters." (LS 158)

"There is an urgent need to develop policies so that in the next few years the emission of carbon dioxide and other highly polluting gases can be drastically reduced, e.g. substituting for fossil fuels and developing sources of renewable energy" (LS 26)

"We know that technology based on the use of highly polluting fossil fuels needs to be progressively replaced without delay" (LS 165)

[53] https://www.avemariapress.com/product/1-59471-211-5/Ten-Commandments-for-the-Environment/

Recommendations:

NJPN joins with the Climate Coalition, in which we have members in common[54] such as CAFOD and Columban missionaries, **in not supporting shale gas extraction in the UK.** The Coalition says, "The government has failed to demonstrate convincingly that [fracking] will not compromise the UK's legally binding climate change targets, or its broader commitment to limiting global climate change to two degrees. Britain should be leading the world in shifting away from fossil fuels and towards clean and sustainable energy, rather than trying to extract ever more inaccessible fossil fuels."[55]

We recognise that because the issues are complex, with incomplete information, and local and global circumstances that are continuously changing, people will sincerely come to different conclusions. In making this recommendation we are taking a moral decision that we believe is most likely to favour the common good and meet our Christian obligations founded on love of God and respect for His creation.

We need to reduce our CO_2 emissions by 80% by 2050 if we are to have any chance of preventing catastrophic climate change. Fossil fuels are the main source of CO_2. Since we have to do it some time, the sooner we take the action necessary, the better placed we will be to meet the challenges ahead. We believe following a carbon based fuel strategy, which includes fracking, will indeed make it more difficult to reach our climate change commitments and potentially our renewable energy targets. This will have lasting adverse effects on the whole of society, and especially the poor. The development of shale gas may undermine the necessary drive for energy efficiency and clean renewable energy within UK energy policy. In the view of NJPN, fracking is distracting energy firms and governments from investing in renewable sources of energy, and encouraging continued reliance on fossil fuels. We need a 21st century energy revolution based on efficiency and renewables, rather than increased burning of fossil fuels that will add to climate change.

The Catholic bishops for all continents said in a statement prior to the Paris Climate Talks: "Put an end to the fossil fuel era…. And provide affordable, reliable and safe renewable energy access for all."[56] The NJPN agrees with that, and supports the divestment movement[57] which is growing in the Catholic and other Churches.

The NJPN calls for simpler lifestyles and recommends campaigns such as 'EcoChurch'[58] from Arocha[59], 'LiveSimply'[60] by CAFOD[61], the 'Way of Life'

---

[54] http://www.theclimatecoalition.org/members
[55] http://www.theclimatecoalition.org/fracking-and-climate-change
[56] http://www.cidse.org/articles/item/675-catholic-bishops-statement-in-lima-on-the-road-to-paris.html
[57] http://brightnow.org.uk/
[58] https://ecochurch.arocha.org.uk/
[59] http://www.arocha.org/en/
[60] http://cafod.org.uk/Campaign/How-to-campaign/Livesimply-award

movement[62] and 'Joy in Enough'[63] both by Green Christian[64], which all aim to lower carbon footprints and reduce the need for ever greater quantities of energy. They also encourage deeper appreciation and respect for Water.

NJPN calls on the Government at the very least to adopt the 10 key recommendations of the Royal Society and Royal Academy of Engineering to address the technical risks of fracking[17].

Conclusions

The particular Christian perspective is love, love of creation – people, animals, plants, minerals, etc – because of our love of the Creator, and His love for us. Any consideration about use and distribution of resources is incomplete without that love. The challenge for each of us is how to bring Christian love to the debate about fracking, applying the prism of love to the known facts, dilemmas and areas of uncertainty. We may come to different conclusions from each other but we should all ensure those conclusions are based on complete transparency and honesty.

The NJPN Environment group is committed to supporting reasoned faith-filled debate about fracking and similar developments. If you would like input to a group or parish based on this paper please contact the administrator on admin@justice-and-peace.org.uk or 020 7901 4864

National Justice and Peace Network
39 Eccleston Square
London
SW1V 1BX

[61] http://cafod.org.uk/
[62] http://www.greenchristian.org.uk/way/
[63] http://www.greenchristian.org.uk/joy-in-enough/
[64] http://www.greenchristian.org.uk/joy-in-enough/