

Senate Environment and Communications Legislation Committee.
Landholder's Right to Refuse (Gas and Coal) Bill 2015.

APPEA response to question on notice.

Question on Notice. Senator Urquhart: *"Can you tell me which countries around the world have banned fracking?"*
"Also, if you could give us some information about why the bans were introduced, that would be helpful as well."

Two countries have banned Shale Gas / Hydraulic Fracturing; France and Bulgaria:

Country	Status
Bulgaria	Banned (2012)
France	Banned (2011)

France (banned)

- In June 2011, the French Parliament passed a law (the Jacob Law)¹ that prohibits Hydraulic Fracturing for shale gas (only) due to environmental concerns. The technique may still be used in French geothermal energy projects.
- France does not have a history of extractive industries and the country currently derives ~76% of its electricity from nuclear energy.² France relies heavily on other neighbouring countries for its natural gas supplies – predominately the Netherlands, Norway, and Russia. France also imports liquefied natural gas (LNG) from countries around the world, notably Algeria, Nigeria and Qatar.
- The public debate in France is highly political. The main concerns with shale gas development are the perceptions that it may potentially contaminate drinking water, and harm local tourism and agrarian activities. Analysis of this debate can be found at the www.shale-gas-information-platform.org (link). The ban on shale gas (along with reduction in nuclear power) is one of the foundations in the coalition agreement for the political alliance between the Socialist Party (PS) and the French Greens (EELV). This alliance gave them the majority in the French Senate – the first ever left majority. Once the Socialists won the presidency and legislative majorities, they reaffirmed their strict stand against hydraulic fracturing.³
- In 2013, the French Académie des Sciences (Academy of Science) released a report in regards to shale gas in France. The scientific report concluded that *"Overall, we found that the risks associated with the extraction of shale gas can be controlled with appropriate regulations"*. The expert report also highlights how France could take advantage in terms of growth, employment, competitiveness and energy security.⁴

Bulgaria (banned)

- In January 2012, Bulgaria banned exploration for shale gas using hydraulic fracturing after widespread protests. Bulgarian MP's cited France as precedence for the ban.
- Bulgaria is almost completely dependent on Russian gas supplies. In 2015, President Boyko Borisov noted that Bulgaria could use shale to reduce dependence on Russian supplies, but also stated that the moratorium was implemented after a *"massive campaign"* and that lifting the moratorium would be political *"suicide"*.⁵ The president is hopeful that advancements or alternative extraction methods to hydraulic fracturing may allow the development of Bulgaria's shale industry.⁶
- The Bulgarian Chamber of Mining and Geology have officially called for the government to lift the ban.⁷

¹ French UMP Christian Jacob motion against HF <http://www.assemblee-nationale.fr/13/propositions/pion3301.asp>

² <http://www.iea.org/publications/freepublications/publication/KeyWorld2014.pdf>

³ <http://www.shale-gas-information-platform.org/areas/the-debate/the-public-debate-in-france.html>

⁴ <http://www.naturalgaseurope.com/academy-sciences-france-shale-schiste-gaz-huile>

⁵ <http://www.focus-fen.net/news/2015/01/30/361761/bulgarian-pm-i-hope-that-there-will-be-safe-shale-gas-extraction-technology-found.html>

⁶ <http://www.shaleenergyinsider.com/2015/02/02/bulgaria-to-keep-fracking-moratorium/>

⁷ <http://www.shalegas.international/2014/08/19/bulgarian-miners-want-fracking-ban-lifted/>

Three countries have a suspension on Shale Gas and/or Hydraulic Fracturing:

Country	Status
Germany	Moratorium (new legislative package introduced in April 2015)
Netherlands	Moratorium (temporary, enacted in 2013)
UK Scotland and Wales	De facto Moratorium (2015)

Germany (5 year Moratorium on some HF)

- In 2012 Germany enacted a Moratorium on hydraulic fracturing for shale gas. Currently in Germany hydraulic fracturing for gas extraction from shale and coal seams above 3,000 meters is prohibited by the Water Act.
- In September 2013, the German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU) and the Federal Environmental Agency (UBA) presented a study on the environmental impact of shale gas development.⁸ The study recommends that hydraulic fracturing should not be banned, but its application should only be allowed with strict regulation in place and should be accompanied by intensive administrative and scientific supervision.
- In 2015, the German Academy of Science and Engineering undertook a report into Hydraulic Fracturing ([link](#)). The German Academy found that “A general ban on hydraulic fracturing cannot be justified on the basis of scientific and technical facts. The use of the technology, however, should follow strict safety standards, be clearly regulated and are comprehensively monitored.”
- On 1 April 2015, Germany submitted a legislative package with a number of bills that aim to establish an up-to-date and comprehensive set of rules for the use of the hydraulic fracturing technique for all tight gas, shale gas and coal seam gas exploitation activities. Activities will be subject to environmental restrictions and requirements, especially with respect to water protection, liability and wastewater management. A panel of experts has been established to reassess technological and scientific developments in mid-2018, potentially allowing commercial deployment from 2019.⁹

Netherlands (5 year Moratorium)

- In July 2015, Dutch Minister of Economic Affairs, Henk Kamp, announced that the government will impose a moratorium on hydraulic fracturing until 2020 while studies and research commissioned in 2013 are completed. The moratorium is due to uncertainty over environmental and geological impact.
- Exploration wells are allowed with permission from the government. The Netherlands has issued permits for exploratory drilling of geothermal resources which would utilise hydraulic fracturing.
- The prospectivity of shale gas in this region is relatively unknown. The Netherlands is already self-sufficient in natural gas. Almost 30 percent of the European Union’s gas production comes from the Netherlands.¹⁰
- In August 2013 the Dutch Ministry of Economic Affairs published a report on the potential risks of shale gas production. The report takes the view that the environmental risks are manageable, so long as the correct guidelines are in place.¹¹

⁸ <http://www.umweltbundesamt.de/publikationen/environmental-impacts-of-fracking-related-to>

⁹ <http://www.wsj.com/articles/german-cabinet-approves-anti-fracking-draft-law-1427896555>

¹⁰ <http://www.hollandtrade.com/sector-information/energy/?bstnum=4913>

¹¹ <http://www.rijksoverheid.nl/ministeries/ez/documenten-en-publicaties/kamerstukken/2013/08/26/brief-aan-de-tweede-kamer-schaliegas-resultaten-onderzoek-en-verdere-voortgang.html> (In Dutch)

UK. Scotland and Wales (*de facto* Moratorium)

- Scotland and Wales do not currently have the rights to grant oil and gas permits. This power is governed by the Westminster Government. The UK has not declared a moratorium on hydraulic fracturing (a recent proposal was defeated 308 votes to 52).
- In January / February 2015, Scotland and Wales placed *de facto* moratoria on HF by committing to not granting planning permissions / permits for unconventional oil and gas developments.¹²
- Observers have noted political pressure and intense electoral competition at play in the *de facto* bans. Particularly in the lead up to the Scottish election.¹³¹⁴ Both regions are pushing for an increased devolution in the powers from the Westminster Government.¹⁵
- Scotland's *de facto* moratorium is to allow the Scottish government to conduct necessary public health and environmental assessments of the practice. Scotland will carry out a full public consultation on oil and gas extraction to ensure the public's opinion is heard on the issue.¹⁶
- On 4 February 2015 the Welsh government backed a motion (37 to 16 votes) by Plaid Cymru – the National party of Wales – stating *'that energy should be fully devolved to the National Assembly for Wales and that the Welsh Government should have the power to block fracking.'*¹⁷
- In September 2013, the Scottish Government convened an Independent Expert Scientific Panel to report on the scientific evidence relating to unconventional oil and gas.¹⁸ Like most reviews undertaken worldwide the panel found that the impacts of hydraulic fracturing and Shale gas can be mitigated if carefully considered. They also found that *"the regulatory framework is largely in place to control the potential environmental impacts of the production of unconventional oil and gas in Scotland."* Panel member, Professor Paul Younger, Rankine chair of engineering at Glasgow University, has been reported in saying that the Scottish Government's justifications for an indefinite moratorium were "all made up" and "completely feigned".¹¹

¹² <http://www.theguardian.com/environment/2015/jan/28/scotland-announces-moratorium-on-fracking-for-shale-gas>

¹³ <http://www.bbc.com/news/uk-scotland-scotland-politics-31016537>

¹⁴ http://www.heraldscotland.com/politics/13507248.Local_SNP_branches_join_push_for_party_to_adopt_blanket_fracking_ban/

¹⁵ <http://www.dailyrecord.co.uk/news/scottish-news/fracking-facts-scots-government-under-5203559>

¹⁶ <http://www.fergusewing.com/fergus-ewing-announces-moratorium-on-fracking/>

¹⁷ <http://www.senedd.assembly.wales/ieListDocuments.aspx?Cid=153&Mid=3106&Ver=4>

¹⁸ <http://www.gov.scot/Resource/0045/00456579.pdf>.

European Studies on Hydraulic Fracturing

A number of assessments are now available from a range of science and engineering committees and academies within Europe. These include:

Authors	Summary
UK. House of Commons Energy and Climate Change Committee (2011).	The committee of the United Kingdom House of Commons undertook an inquiry into Shale Gas in 2010. The committee found that <i>"hypothetical and unproven risk must be balanced against the energy security benefits that shale gas could provide to the UK."</i> They concluded that <i>"on balance, a moratorium in the UK is not justified or necessary at present."</i> ¹⁹ (link)
UK. Royal Society and Royal Academy of Engineering (2012)	<i>Shale gas extraction in the UK: a review of hydraulic fracturing.</i> ²⁰ The UK Government's Chief Scientific Adviser, Sir John Beddington FRS, asked the Royal Society and the Royal Academy of Engineering to review the scientific and engineering evidence of Shale gas extraction. The final report found that <i>the Health, Safety and Environmental risks associated with hydraulic fracturing can be managed effectively as long as operational best practices are implemented and enforced through regulation.</i> (link)
French Académie des Sciences (December, 2012).	<i>La recherche scientifique face aux défis de l'énergie; Rapport du Comité de prospective en énergie de l'Académie des sciences Ed.</i> ²¹ The scientific report concluded that <i>"Overall, we found that the risks associated with the extraction of shale gas can be controlled with appropriate regulations"</i> . The expert report also highlights how France could take advantage in terms of growth, employment, industrial competitiveness and energy independence. (link)
French General Council of Industry, Energy and Technology (CGIET) and the General Council of the Environment and Sustainable Development (CGEDD) (2012)	<i>Hydrocarbures non-conventionnels en France.</i> The report recommends more time to improve the quality of the law based on a better knowledge of the subject. It also investigates alternative production methods (pneumatic fracturing) and recommends the establishment of a national commission to investigate shale oil and gas exploration and development. The law to ban hydraulic fracturing and Shale development in France was announced prior to this report being finalised and presented. (link)
Dutch Ministry of Economic Affairs (2013)	The Minister released a report on the potential risks of shale gas extraction. The report takes the view that the environmental risks associated with extraction are manageable, so long as the correct guidelines are in place. ²² (link)
Independent Expert panel. Scottish Government. (2013).	<i>Report on Unconventional Oil And Gas.</i> An Independent Expert Scientific Panel report on the scientific evidence relating to unconventional oil and gas. ²³ The panel found that the impacts can be mitigated if carefully considered. They also found that <i>"the regulatory framework is largely in place to control the potential environmental impacts of the production of unconventional oil and gas in Scotland"</i> . (link)

¹⁹ <http://www.publications.parliament.uk/pa/cm201012/cmselect/cmenergy/795/79505.htm#a4>

²⁰ <https://royalsociety.org/~media/policy/projects/shale-gas-extraction/2012-06-28-shale-gas.pdf>

²¹ <http://www.bibsciences.org/bibsup/acad-sc/common/articles/rapport-defis-energie.pdf>

²² <http://www.rijksoverheid.nl/ministeries/ez/documenten-en-publicaties/kamerstukken/2013/08/26/brief-aan-de-tweede-kamer-schaliegas-resultaten-onderzoek-en-verdere-voortgang.html> (In Dutch)

²³ <http://www.gov.scot/Resource/0045/00456579.pdf>.

German Federal Ministry of the Environment. (2013)	<i>Environmental Impacts of Fracking Related to Exploration and Exploitation of Unconventional Natural Gas Deposits.</i> The German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU) and the Federal Environmental Agency (UBA) presented a study on the environmental impact of shale gas development. ²⁴ The study recommends that hydraulic fracturing should not be banned, but its application should only be allowed with strict regulation in place and should be accompanied by intensive administrative and scientific supervision. (link)
Acatech. German Academy of Science and Engineering (2015)	Hydraulic Fracturing, A technology under discussion. The German Academy found that “A general ban on hydraulic fracturing cannot be justified on the basis of scientific and technical facts. The use of the technology, however, should follow strict safety standards, be clearly regulated and are comprehensively monitored.” (link)
Lithuanian Academy of Sciences (2014)	<i>Genesis of shale geological formations and hydrocarbon extraction: impact on environment and human health.</i> ²⁵ Compiler Algimantas Grigelis. The report acknowledges potential risks, but notes that technological means available used for shale gas are technically safe, if requirements are met. The report recommends strengthened regulatory controls. (link)
Swiss Academies of Arts and Sciences (2014)	<i>Eine Technik im Fokus: Fracking – Potenziale, Chancen und Risiken (A technique in focus: Fracking - potentials, opportunities and risks).</i> The report discusses hydraulic fracturing and notes that the creation of a legislative framework or guidelines for licensing is a priority. One of the main concerns of the authors is the high space requirements in the relatively small country like Switzerland (link)
European Union. EASAC Council. (2014).	This EASAC analysis supports calls for effective regulations in the health, safety and environment fields highlighted by other science and engineering academies and in this statement. ²⁶ (link)
Polish Academy of Sciences (2014)	<i>Description of the shale gas formations: reserves and characteristics of problems related to its exploitation.</i> The Presidium of Polish Academy of Sciences. The existing regulations in Poland and Europe concerning environmental protection are effective, but also restrictive. The report recommends effective oversight of operations. (link)
Polish Geological Survey (2014)	<i>The development of shale gas in Poland and its prospects in the Czech Republic - analysis and recommendations.</i> The report outlines that the results of environmental tests are the basis of the position of the Polish government, which believes that “existing EU legislation provides sufficient protection of the environment during the exploration and production of shale gas and does not require modification.” “The moratorium (in the Czech Republic) itself can be seen as a populist, poorly articulated response to the need to change legislation that, in fact, need serious reform.” (link)

²⁴ <http://www.umweltbundesamt.de/publikationen/environmental-impacts-of-fracking-related-to>

²⁵ http://skalunudujos.lt/wp-content/uploads/2014-12-02_Genesis_of_shale_geological-formations_LMA-website.pdf

²⁶ http://www.leopoldina.org/uploads/tx_leopublication/2014_EASAC_ShaleGasExtraction_STATEMENT.pdf