POLAND'S QUEST FOR SHALE GAS AND ENERGY INDEPENDENCE: AN EXAMINATION OF DOMESTIC AND INTERNATIONAL HURDLES

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I. INTRODUCTION

Two years ago, shale gas discovery in Poland sparked the beginning of efforts by multinational corporations to exploit perhaps one of the largest organically rich shales in Europe—natural gas quantities capable of allowing the whole region of Eastern Europe energy independence.[1] Companies that have already invested in this potential energy have included Chevron and Exxon Mobil.[2] The only thing standing between investors and exploration are gas permits and a growing European public opinion about the environmental threats hydraulic fracturing potentially creates.[3]

The extent of the contested gas reserves in Europe, and specifically in Poland, is largely unknown.[4] A report published by Advanced Resources International found three primary basins in Poland where the gas will likely be targeted.[5] These basins, the Baltic in the north, the Lublin in the south, and the Podlasie in the east are a part of the Lower Silurian-Ordovician

1. Artur Kacprzak, *Shale Gas in Poland: A Future Blessing or a Curse?*, FUTURE CHALLENGES (Aug. 26, 2011), http://futurechallenges.org/shale-gas-in-poland-future-blessing-or-a-curse.

2. *Id.*

3. GREIG AITKEN ET AL., SHALE GAS UNCONVENTIONAL AND UNWANTED: THE CASE AGAINST SHALE GAS 4, 6 (Samuel Fleet & Paul de Clerck eds., 2012).

4. *Id.* at 6.

5. *See* VELLO A. KUUSKRAA, ADVANCED RES. INT'L, INC., WORLDWIDE GAS SHALES AND UNCONVENTIONAL GAS: A STATUS REPORT 14 (2009).

shale.[6] All three of these regions display favorable characteristics for profitable natural gas extraction.[7] The report estimates that these reserves contain 710 tcf (trillion cubic feet) of unrisked shale gas, with a risked recoverable source of 100 tcf of that total amount.[8] While these reserves contain far less than the reserves found in America or Russia, the Lower Silurian shale still contains about six times Europe's entire conventional reserves.[9] Considering the fact that Poland could change its importer status to that of an exporter for the region, both the government and industry are anxious to take hold of this great opportunity for the energy sector.[10]

While over 100 leases have been granted,[11] European consumers are conscious of the chemicals used in the "fracking" process and their effects on ground water.[12] These concerns will likely hamper developers, including the largest companies such as the ones discussed previously, in the extraction and sale of natural gas from Poland.[13] Similar environmental concerns have been raised in America.[14] Chesapeake Energy, one of the largest shale gas firms in the world, recently ceased operations in New York State after similar outcries were raised there.[15] European

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6. *Id.*; Russell Wright & Pramod Kulkarni, *International Shale Resource Assessment Goes On, But Discoveries Remain Elusive*, WORLD OIL (Aug. 2012), http://www.worldoil.com/August-2012-International-shale-resource-assessment-goes-on-but-discoveries-remain-elusive.html.

7. *See* KUUSKRAA, *supra* note 5, at 14 (noting "prospective" and "favorable" conditions for the mentioned basins).

8. *Id.*

9. *The Hunt for Shale Gas in Europe: Bubbling Under*, ECONOMIST, Dec. 5, 2009, at 75 [hereinafter *The Hunt for Shale Gas*], *available at* http://www.economist.com/node/15022457; *Shale Gas in Poland*, BNK PETROLEUM, http://www.bnkpetroleum.com/en/?option=com_content&view=article&id=104&Itemid=160 (last visited Mar. 12, 2013) (depicting the Polish shale formations in an infographic).

10. Kacprzak, *supra* note 1.

11. *Work Together Better, Shale Gas Investors Tell Polish Companies*, REUTERS, http://www.reuters.com/article/2013/03/27/poland-shale-idUSL6N0BSB8Z20130327 (last visited Apr. 20, 2013).

12. *See The Hunt for Shale Gas*, *supra* note 9.

13. *See id.* (stating "European consumers are not likely to ignore such matters, even if the industry says the practice is safe").

14. *Id.*

15. *Id.*

consumers are already showing to be less tolerant about hydraulic fracturing than Americans, despite the industry telling them that the process is safe.[16]

These concerns are not local to Poland's constituency, in fact, other countries, including France, Germany, and Bulgaria, have all taken a firm position against hydraulic fracturing.[17] France even went so far as to pass a moratorium in the entire country, which bans the use of hydraulic fracturing because of its potential environmental damage.[18] While other countries have not gone to that extent, there have been signs indicating members of the European Union will seek to ban hydraulic fracturing throughout Europe via a stringent environmental regulation.[19] However, Poland has resisted these efforts, by threatening to veto any antifracking ban raised by the European Union veiled as an environmental regulation.[20] Previously, Poland held the six-month rotating presidency of the European Union, allowing it to unilaterally veto any regulation raised that would impede "unconventional" gas production, although no such veto became necessary.[21] However, with Ireland as the

16. *Id.*; *European Worries: Sorting Frack from Fiction*, ECONOMIST, July 14, 2012, at 8–10, *available at* http://www.economist.com/node/21558458 (noting considerations by several nations to ban fracking); Carol J. Williams, *U.S. Gas Bonanza from Fracking Slow to Spread Globally*, L.A. TIMES (Oct. 24, 2012, 5:00 AM), http://latimesblogs.latimes.com/world_now/2012/10/us-boon-from-shale-gas-fracking-holds-little-global-promise.html (describing moratoriums on fracking in several European nations and protests by concerned citizens).

17. AITKEN ET AL., *supra* note 3, at 23.

18. Tara Patel, *France to Keep Fracking Ban to Protect Environment, Sarkozy Says*, BLOOMBERG BUSINESSWEEK (Oct. 4, 2011), http://www.businessweek.com/news/2011-10-04/france-to-keep-fracking-ban-to-protect-environment-sarkozy-says.html.

19. *See* AITKEN ET AL., *supra* note 3, at 22–27 (noting that "[p]roposals to exploit shale gas have met with widespread opposition across the European Union" and summarizing the campaigns in countries like France and Bulgaria).

20. *Poland to Veto EU Shale Gas Rules*, UNITED PRESS INT'L (Sept. 30, 2011), http://www.upi.com/Business_News/Energy-Resources/2011/09/30/Poland-to-veto-EU-shale-gas-rules/UPI-99231317378060/ [hereinafter *Poland to Veto EU Shale Gas Rules*].

21. *Id.*; *see also European Parliament Calls for Shale Regulation, Rejects Ban*, HYDRAULIC FRACKING BLOG FULBRIGHT & JAWORSKI L.L.P. (Nov. 26, 2012), http://fracking.fulbright.com/2012/11/european-parliament-calls-for-shale.html (describing the EU's decision to allow member states to determine whether or not it will engage in the exploitation of shale gas rather than imposing a ban on hydraulic fracturing).

current president,[22] the European Commission currently looks to examine its options for diversifying energy supplies including production of unconventional gas while managing environmental risks.[23]

The political and environmental concerns are only two of Poland's problems involving their efforts for domestic energy production. Unlike the United States, which has vast landscapes conducive to drilling lots of wells for production, Europe is much more densely populated.[24] This dense population will create difficulties in not only drilling the wells necessary to extract the shale gas, but also in mustering local support; support that many believe is necessary if Poland is going to challenge the European Union's ability to control their domestic energy policy.[25]

To examine the possible outcomes of Poland's efforts for energy independence and their quest to become an exporter in the Eastern European market, this Comment will assess the legal, policy, as well as international, and environmental challenges associated with shale gas production. Part I provides an overview of the history of natural gas production in Europe, an examination of shale gas extraction itself and current exploration and development in Poland. Part II highlights the ongoing economic criticisms and environmental concerns, including water contamination, surrounding hydraulic fracturing projects.

Finally, Part III will compare Poland's mining statutes and its potential "corporation friendly" legislation to the European Union's current regulations concerning shale gas affecting the unconventional gas production and the European Union's concern and focus on global climate change. With Poland already asserting power both in the local and international spheres, will Poland successfully convince other member-states that Poland's shale gas production should be controlled through Poland's

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22. *Ireland Warned about EU Presidency Challenges*, RAIDIÓ TEILIFÍS ÉIREANN (Jan. 1, 2013), http://www.rte.ie/news/2013/0101/ireland-eu-presidency.html.

23. *Commission Work Programme 2013*, at 8, COM (2012) 629 final (Oct. 23, 2012).

24. *The Hunt for Shale Gas*, *supra* note 9.

25. *See Poland to Veto EU Shale Gas Rules*, *supra* note 20 (discussing how Poland should go about diffusing local concerns in order to allow fracking in a safe way).

already-existing mining regulation law, or will countries such as France use a grassroots campaign to harness the environmental concerns surrounding hydraulic fracturing to promulgate a EU environmental regulation that would ban the operations all together? The developments are still ongoing, but it is an international development worth watching.

II. OVERVIEW OF SHALE GAS DEVELOPMENT, TECHNOLOGY, AND EUROPEAN DEVELOPMENT ABROAD.

A. Hydraulic Fracturing

The primary method of extracting natural gas from typical shale gas reservoirs involves hydraulic fracturing stimulation, or "fracking," as they call it in the industry.[26] Hydraulic fracturing is a technology that was first used commercially in 1949 and is used to dramatically increase production of natural gas extraction.[27] Fracturing creates spaces in the rock formations below the ground to enlarge the pores within the rock itself.[28] Fracking is performed by "pumping fluid down a well at high pressure so that it is forced out into the formation."[29] The high pressure from the fluid creates cracks in the rock below the surface that form along the natural azimuth of natural fault lines in specific patterns.[30] The cracks created by the fracturing process allow resources, typically natural gas, to move freely from the rock pores to the wellbore.[31]

Each fracking operation is designed specifically for a particular well.[32] Engineers select specific injection pressure, volume of the material to be used, and the "type of proppant to achieve a desired result based on data regarding porosity, permeability, and modulus (elasticity) of the rock."[33] Engineers

26. *Coastal Oil & Gas Corp. v. Garza Energy Trust*, 268 S.W.3d 1, 6 (Tex. 2008).

27. *Id.* at 7 (noting fracking increases production by increasing a well's exposure to the formation).

28. *Id.* at 6, 7.

29. *Id.* at 6.

30. *Id.*

31. *Id.* at 7.

32. *Coastal Oil*, 268 S.W.3d at 7.

33. *Id.*

can estimate the length and size of the fractures created by the process in three different ways: the hydraulic length[34] the propped length[35] and the effective length.[36] However, even with this data, it is impossible to know the direction and actual distances the hydraulic fracturing process will create.[37] In fact, no technique or technology can control the direction or size of the fractures created; the fractures will follow "Mother Nature's fault lines in the formation."[38]

The process of preparing a tract of land for a well and bringing that well to completion is generally fairly short.[39] During site preparation, an entire tract of land will be cleared to accommodate the well, storage tanks, and any other materials necessary for production.[40] Typically, three to five acres of area must be cleared, in addition to any access roads for transporting materials to the site.[41] "According to the American Petroleum Institute (API, 2009a), the goal of well design is to ensure the environmentally sound, safe production of hydrocarbons . . . ."[42] Proper well construction is absolutely necessary to protect against both surface and subsurface environmental contamination.[43]

Each well, including site preparation, takes a few months to

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34. *Id.* (defining the hydraulic length as the "distance the fracking fluid will travel" which is far as 3,000 feet from the well).

35. *Id.* at 6–7 (noting the propped length is slightly shorter than the hydraulic length; also noting a proppant is a particle(s) in fracturing fluid to hold open fractures after a hydraulic fracturing treatment).

36. *Id.* at 7 (defining the effective length as the distance "within which the fracking process will actually improve production.").

37. *See id.* (noting "virtually nothing can be done" to control the direction of the fractures).

38. *Coastal Oil*, 268 S.W.3d at 7.

39. AM. PETROLEUM INST., FREEING UP ENERGY-HYDRAULIC FRACTURING: UNLOCKING AMERICA'S NATURAL GAS RESOURCES (2010), *available at* http://www.api.org/policy/exploration/hydraulicfracturing/upload/hydraualic_fracturing_primer.pdf.

40. U.S. ENVTL. PROT. AGENCY, UEPA/600/R-11/122, PLAN TO STUDY THE POTENTIAL IMPACTS OF HYDRAULIC FRACTURING ON DRINKING WATER RESOURCES 12 (2011).

41. *Id.*

42. *Id.* at 13.

43. *Id.*

begin operations.[44] Upon completion, the well can produce for twenty to forty years.[45] Site preparation typically takes four to eight weeks, and the actual rig work takes four to five weeks, "including casing and cementing and moving all associated auxiliary equipment off the well site before fracturing operations commence."[46] During the initial phase of development, the local community will experience disturbances due to the construction process.[47] These disturbances include noise, dust, diesel exhaust, and water disposal.[48] Depending on the type of tract and the area the tract is situated in, these disturbances can range from nonfactors to that of a nuisance.[49] While the construction process is large-scale, the actual producing well is quite small, in fact, the production site is typically the size of a large two-car garage.[50]

B. European Natural Gas Production and Shortage.

Western Europe has three primary natural gas producers—Norway, the United Kingdom, and the Netherlands.[51] Currently, Western Europe reserves account for less than five percent of the world's estimated natural gas resources.[52] Yet, according to a survey conducted in 2009, about twenty-six percent of the primary energy consumption of the majority of European countries came from natural gas.[53] Europe produced fifty-five percent of its own natural gas for

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44. AM. PETROLEUM INST., *supra* note 39.

45. *Id.*

46. *Id.*

47. *Id.*

48. *Id.*

49. *See The Hunt for Shale Gas*, *supra* note 9 (noting that densely populated areas, such as Europe, would prove to be more difficult to exploit shale gas).

50. AM. PETROLEUM INST., *supra* note 39.

51. Euan Mearns, *The European Gas Market*, OIL DRUM (Dec. 11, 2007), http://www.theoildrum.com/node/3283.

52. Bertrand Rossert, *The Western European Gas Market: Future Gas Infrastructure in Western Europe*, EUR. INV. BANK 10 (n.d.), http://www.eib.org/attachments/pj/western_european_gas_market_en.pdf.

53. Rune Likvern, *Europe and Natural Gas: Are Tough Choices Ahead?*, OIL DRUM (Aug. 3, 2010), http://www.europe.theoildrum.com/node/6803 [hereinafter *Europe and Natural Gas*].

consumption.[54] The remaining resources were imported largely from Russia and Algeria.[55] Gas consumption in Western Europe has been rising nearly 2.6% per year since 1980, yet many reserves, including Russia's, are in decline.[56] Before the discovery of the large shale gas formation under Poland's territory, European indigenous gas production would peak in 2008.[57]

In 2008, actual data showed that demand grew 5.3% higher than the 2.6% projection.[58] During 2007, the increased levels of consumption caused natural gas storage levels in the United Kingdom to drop dramatically.[59] In general, there is a wide consensus among countries, including the United States and Germany, to never have storage capacities lower than twenty percent of working capacity.[60] The United Kingdom's storage capacities dropped to four percent of annual consumption.[61] Winter cold-snaps or technical issues that cause shortages in supply or an energy embargo in an oil exporting country could lead to a scenario where entire countries in Europe could be without heating for an entire winter.[62]

To counteract the enormous increase in consumption, Europe may be forced to increase imports, primarily from Russia, North Africa, as well other countries exporting LNG.[63] As of 2007, Russia was responsible for twenty-five percent of

54. Mearns, *supra* note 51 (referencing production in 2006).

55. *Id.*

56. *Id.*

57. *Id.*; *see* Dimiter Kenarov, *Poland's Shale Gas Dream*, FOREIGN POL'Y (Dec. 26, 2012), http://www.foreignpolicy.com/articles/2012/12/26/polands_shale_gas_dream (noting discovery of Poland's shale gas formation was not announced until 2011).

58. Rune Likvern, *Will the UK Face a Natural Gas Crisis this Winter? (Part 2 of 2)*, OIL DRUM (Dec. 19, 2008), http://www.theoildrum.com/node/4878 (noting natural gas demand in the United Kingdom).

59. *Id.*

60. *Id.*

61. *Id.*

62. *See id.* (stating that a number of issues may lead to a situation where the U.K. would be without heat during winter).

63. *See* Rune Likvern, *Will the UK Face a Natural Gas Crisis this Winter? (Part 1 of 2)*, OIL DRUM: EUR. (Oct. 28, 2008), http://www.europe.theoildrum.com/node/4699.

imported gas into Europe.[64] Russia seems to be positioned to continue providing Europe with a substantial amount of natural gas.[65] Currently, Russia holds the largest proven natural gas reserves in the entire world.[66] Natural gas serves as Russia's primary source of fuel, accounting for over half of domestic consumption.[67] Russian natural gas exports are controlled by a monopoly, run by Gazprom, which controls over eighty-five percent of that production.[68] While Russia has the world's largest proven reservoirs, its three biggest gas fields—Yamburg, Urengoy, and Medvezhye—are all in decline.[69] Therefore, in order to maintain the current twenty-five percent plus the 2.6% increase per annum, secondary assets constituting supplies to smaller countries will have to be reduced or cut entirely out of Russia's export scheme.[70]

With consumption rates continuing to climb, and overall European production declining, Europe faces the prospect of importing larger quantities of natural gas from remote parts of the world.[71] Current imports are averaging at 331 billion cubic meters (bcm) per annum.[72] It is estimated, however, that nearly 442 bcm will be required by 2020 in order to facilitate the increased consumption.[73] This means that nearly 111 bcm are unaccounted for that will be necessary to facilitate the next

64. *Id.*

65. *See id.* (inferring that since Russia has the largest natural gas reserve in the world and seems to have "positioned" itself to export to the EU, Russia will continue to provide substantial gas exports to the EU).

66. *Russia: Analysis*, U.S. ENERGY INFO. ADMIN. (Sept. 18, 2012), http://www.eia.gov/countries/cab.cfm?fips=RS.

67. *Id.*

68. *Europe and Natural Gas*, *supra* note 53.

69. Mearns, *supra* note 51.

70. *Id.*

71. *See id.* (noting that with increased demand and falling domestic gas production imports may come from North and West Africa).

72. *See* Michael Ratner, CONG. RESEARCH SERV., R42405, EUROPE'S ENERGY SECURITY: OPTIONS AND CHALLENGES TO NATURAL GAS SUPPLY DIVERSIFICATION 6 (2012) (citing 11.7 trillion cubic feet, converted for consistency with a ratio of 1 cubic foot per 0.0283 cubic meters).

73. *Id.*

decade of growth and consumption.[74] As of 2009, Europe imported forty-seven percent of its total natural gas supply to sufficiently meet consumption.[75] While imports from the Middle Eastern, Asian, and West African markets are certainly feasible, it would make more economic sense to meet a portion of this need through domestic reserves.[76] Therefore, Poland is situated to facilitate a considerable amount of the European demand through state-level production of natural gas.

This supply-demand ratio perspective was challenged in a recent World Energy Outlook report published in 2011.[77] After examining the numbers, the Polish Institute of International Affairs (PISM) came to the following conclusion: "[T]he expected demand-and-imports growth rate is significantly lower now than was anticipated a few years ago before the economic crises."[78] Discussing imports, PISM felt "[i]mport reliance is also thought to rise more slowly than expected, although numerous factors will matter."[79] The Polish Ministry cautioned the IEA, finding that the data it utilized to make its conclusions "are just supposed to draw a hypothetical picture of a future based on certain assumptions."[80] While the energy market is still volatile and the unconventional gas market itself is even more uncertain, Poland remains confident that its efforts are ushering in a new era of gas production for Europe as a whole.[81]

C. Poland's Shale Gas Initiatives.

Until recently, Poland was only seen as a large coal

74. *Id.*

75. *Europe and Natural Gas*, *supra* note 53.

76. *See* David L. Goldwyn, *Making an Energy Boom Work for the U.S.*, N.Y. TIMES (Nov. 12, 2012), http://www.nytimes.com/2012/11/13/business/energy-environment/making-an-energy-boom-work-for-us.html?pagewanted=all&_r=0 (discussing U.S. energy concerns, this article shows that having more domestic reserves may cushion a country from supply disruptions, though minimally, thus reducing costs).

77. POL. INST. OF INT'L AFFAIRS [PISM], PATH TO PROSPERITY OR RUIN? SHALE GAS UNDER SCRUTINY 18 (Ernest Wyciszkiewicz ed. 2011) [hereinafter POLISH INST. OF INT'L AFFAIRS].

78. *Id.*

79. *Id.*

80. *Id.*

81. *Id.* at 18–19, 46.

producer.[82] However, since 2009, shale gas production has received a lot more attention than Poland's coal-based methane (CBM).[83] According to estimates documented by an oil and gas research group, Poland's shale gas reserves could produce as high as forty-eight trillion cubic feet (tcf) of natural gas.[84] This report, along with others conducted by the IEA, confirms the enormous undiscovered reserves that have attracted ExxonMobil, Lane Energy, Talisman, Chevron, and Aurelian Oil & Gas.[85]

Even in the short-time span between these initial reports estimating the size of the reserve and present day, massive efforts towards exploration and production have already occurred.[86] Over forty-five exploration licenses for shale gas have been granted by the Polish government.[87] While the Poldasie and Lublin basins are benefited by good geological documentation, companies still need to study the actual quality of these reserves in further detail.[88] In July 2011, Poland's antimonopoly commission, UOKiK, approved ExxonMobil and its conglomerate's plants to jointly explore and drill wells for

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82. *See* Int'l Energy Agency [IEA], *Medium-Term Oil & Gas Markets*, at 191 (2010), *available at* http://www.iea.org/publications/freepublications/publication/mtogm2010.pdf [hereinafter IEA].

83. *Id.* at 191*; see also Energy in Poland: Fracking Heaven*, ECONOMIST, June 23, 2011, at 79, *available at* http://www.economist.com/node/18867861 (noting that a dozen companies have promised to drill up to 120 test wells to investigate potential shale reserves).

84. Susan L. Sakmar, *The Global Shale Gas Initiative: Will the United States be the Role Model for the Development of Shale Gas Around the World?*, 33 HOUS. J. INT'L. L. 369, 394 (2011).

85. IEA, *supra* note 82, at 191; Sakmar, *supra* note 84, at 394 (referring to data from Wood Mackenzie, an oil and gas research group). It should be noted that ExxonMobil terminated its Polish operations because two early gas wells were unable to produce commercial quantities. Isabel Ordonez, *Exxon Ends Drilling for Poland Shale Gas*, WALL ST. J., June 18, 2012, http://online.wsj.com/article/ SB10001424052702303836404577474532500852896.html. Companies such as Chevron and Marathon, however, are still pursuing shale gas extraction in the area. *Id.*

86. *See* IEA, *supra* note 82, at 191 (noting the high number of exploration licenses already acquired by energy companies in the past three years).

87. *Id.*

88. *Id.* at 190.

shale gas in Poland.[89] Chevron also acquired rights to explore in Poland and the company has already completed its first well.[90] Chevron was awarded three five-year exploration licenses in December 2009 and a fourth in February 2010.[91] Chevron's total interest is about 1.1 million acres.[92]

The reason behind this race-to-drill in Poland stems largely from the potential natural gas shortage in Europe highlighted in the previous section. A senior vice president at Exxon said, "conventional gas fields currently supplying Europe are expected to decline, raising dependence on imports delivered through pipelines and as liquefied natural gas."[93] Further, the same executive stated, at a London Oil and Money Conference organized by the UK government, "'[b]y 2030, Europeans are expected to be significantly more reliant on imports of natural gas than they are today.†.†. . Europe's unconventional natural resources can provide the opportunity to offset this changing mix with domestic supplies.'"[94]

However, three primary obstacles face corporations. First, a large portion of the energy community in Europe is polarized "largely due to the lack of reliable data about the economic feasibility of shale gas extraction in Europe."[95] Also, environmental concerns surrounding fracking have caused health and environmental activists, and even France as a whole, to begin protesting the production of shale gas.[96] Among their concerns is ground water contamination and landscape

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89. Adam Easton, *Regulator Clears ExxonMobil-Total Exploration for Polish Shale Gas*, PLATTS (July 28, 2011, 7:10 AM), http://www.platts.com/RSSFeedDetailedNews/RSSFeed/NaturalGas/8172478. Exxon has subsequently terminated operations in Poland after two wells were unable to produce a commercial quantity. Ordonez, *supra* note 85.

90. IEA, *supra* note 82, at 191; Ordonez, *supra* note 85 (confirming that currently Chevron has completed its first well and is preparing to drill a second well).

91. IEA, *supra* note 82, at 191.

92. *Id.*

93. James Kanter, *Oil Executive Promotes Shale Gas to Europeans*, N.Y. TIMES, Oct. 13, 2011, at B5.

94. *Id.*

95. *Poland Steps Up Efforts Against EU Shale Legislation*, NATURAL GAS EUR. (Oct. 5, 2011, 8:22 AM), http://www.naturalgaseurope.com/poland-steps-up-efforts-against-eu-shale-legislation-2856.

96. *Id.*

destruction by the fracking process.[97] Finally, while Poland is actively promoting drilling activities within its territory, the European Union as a whole has been less optimistic.[98]

III. ECONOMIC AND ENVIRONMENTAL CONCERNS SURROUNDING POLAND SHALE GAS DEVELOPMENT.

A. Economic Feasibility—Justifying the Lack of Data Concerning Production Capabilities.

The national debates surrounding Poland's massive undertaking of shale gas production began with EU leaders questioning the economic viability of the project itself.[99] Polish researchers claim that these debates stem from a very basic problem—a lack of reliable data to support the profitability of production.[100] Many researchers and EU leaders strongly feel that the lack of data is a sufficient reason to halt the project entirely until such data can be garnered.[101] Unfortunately for Poland, unconventional gas reserve data is simply scarce when one is investigating basins outside of the North American continent.[102]

The amount of shale gas available is not the only problem Poland is faced with solving. In fact, many researchers are demanding data regarding the environmental footprint surrounding individual drilling projects, the footprint of the entire drilling project, and the economics behind securing environmental protection to ensure that footprint is minimized.[103] Therefore, the current debate setting in Europe about Poland's unconventional reserve project is one of

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97. *See* Sakmar, *supra* note 84, at 399–401 (noting general concerns of hydraulic fracturing opposition).

98. *See* Neil Buckley,*Resources: Shale Gas Will Have Its Day in Europe—But Not Just Yet*, FIN. TIMES (Nov. 8, 2012, 8:50 PM), http://www.ft.com/cms/s/0/3b56d8b2-1c42-11e2-a63b-00144feabdc0.html#axzz2NNXvgWfw (noting that while Poland proceeds with shale development, several countries have delayed or banned exploration).

99. *Poland Steps Up Efforts Against EU Shale Legislation*, *supra* note 95.

100. *Id.*

101. POLISH INST. OF INT'L AFFAIRS, *supra* note 77, at 5.

102. *Id.*

103. *Id.*

extremes, rather than compromise or trade-offs.[104] To make things even more difficult, the debate has transformed from one centered on industry experts and primarily the energy community, to one in the national forum between politicians and interest groups.[105] Therefore, Poland must prove economically efficient methods of drilling while satisfying both the political and public concerns facing projects.[106]

Polish officials are trying to relate their potential unconventional gas reserve exploitation to that of the North American experience.[107] Currently, the production of shale gas in the United States is expanding rapidly.[108] The Energy Information Administration conducted a study which focused on the last decade of U.S. shale gas production and made future projections.[109] The study found that during that time, production increased eight hundred percent, shale gas provides ten percent of total U.S. gas production, and over twenty percent of total remaining recoverable gas in the United States will be found in shale gas basins.[110] If these estimates are correct, "the long-term unconventional gas supply, i.e., in the 2030–2035 time horizon, could satisfy as much as eight percent of the total U.S. energy demand."[111] With this kind of success, it would be difficult for any pundit to debate the economic boom such a project would create in Europe. However, those researchers argue that the European market, legal system, and political atmosphere make "the automatic transfer of the North American experience to Europe impractical, if not impossible."[112]

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104. *Id.* at 6.

105. *Id.*

106. *Id.*

107. POLISH INST. OF INT'L AFFAIRS, *supra* note 77, at 8 (observing the challenges faced by North America as fodder for debate of potential regulatory framework in the industry, described in a report by Polish officials).

108. Sakmar, *supra* note 84, at 381.

109. U.S. ENERGY INFO. ADMIN., ANNUAL ENERGY OUTLOOK 2010 (2010), *available at* http://www.eia.doe.gov/oiaf/aeo/pdf/0383(2010).pdf.

110. Sakmar, *supra* note 84, at 381.

111. POLISH INST. OF INT'L AFFAIRS, *supra* note 77, at 8.

112. *Id.*

Those critics argue that the U.S. reserve estimates and overall success must be scrutinized.[113] First, while the Energy Information Administration is a credible source and capable of estimating reserve potential, other accounts vary as to how much unconventional gas there is in U.S. deposits. [114] For instance, the United States Department of Energy put unconventional reserve estimates at 7.6 tcm while the Potential Gas Committee (PGC), in the same year, published findings of reserve estimates totaling 17.5 tcm.[115] Incredibly, in the very same year, Navigant Consulting estimated the U.S. deposits "could hold as much as 23.9 [t]cm of shale gas."[116] Experts suggest that the differences in estimates with respect to calculating the tcm of a specific reserve "can be justified in light of the remarkable innovative potential of the industry and its ability to exploit economies of scale."[117] New drilling techniques, discoveries and increases in productivity are just a few of the factors experts argue lend to ambitious forecasts about the unconventional deposits of shale gas.[118]

The International Energy Agency (IEA) believes that the discoveries of shale gas in Poland, along with other reserves in China, Australia, and other regions, will usher in a "Golden Age of Gas Scenario."[119] The IEA claims that "global gas reserves and production capabilities will easily follow the increase in demand and that many regions are able to increase gas production."[120] The IEA does have its reservations, however. When discussing areas with little or no gas production currently, the IEA published a report stating "'the future production projections are subject to a large degree of uncertainty, particularly in regions where little or no such production has

113. *Id.*

114. *See id.* at 8 & n.2 (mentioning variability among reports and listing several specific sources of reserve potential estimates).

115. *Id.* at 8 n.2.

116. *Id.*

117. POLISH INST. OF INT'L AFFAIRS, *supra* note 77, at 8.

118. *Id.*

119. *Id.* at 16.

120. *Id.*

been undertaken to date.'"[121] Still, the IEA remains optimistic that the cost of production associated with unconventional gas will continue to drop as North America leads the way in shale gas development.[122] When the cost of production drops, it will become more profitable for other regions with smaller reserves or less sophisticated methods of extraction.[123]

While the IEA remains confident in its projections for North America, China and Australia, its remarks towards shale gas in Europe were far more reserved.[124] The Poland Ministry in its annual report wrote "the IEA does not expect shale gas to become a game-changer for Europe by at least the end of this decade."[125] Using their own forecast figures, the IEA estimated "gas production in OECD member states in Europe will decline from about 310 [b]cm in 2008 to 210 [b]cm in 2035. Conventional gas will dominate the supply picture for the whole period, with unconventional exploration and production rising, in particular in Poland, but still with limited broader implications."[126] Citing many of the same concerns this Comment has discussed, the IEA report spoke of the challenges Poland must face: "Numerous challenges must be overcome to adjust shale-gas developments to European regulatory, legal, economic and social circumstances. Such a view is a result of the global perspective taken by the IEA."[127] Although this forecast seems meek in light of the extraordinary efforts Poland is making to create their shale gas infrastructure, the Poland Ministry citing the IEA report, challenged the IEA forecasting method.[128] The IEA forecast assumes that the European Union is one single entity,

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121. *Id.* (quoting INT'L ENERGY AGENCY, ARE WE ENTERING A GOLDEN AGE OF GAS? 30 (Robert Priddle ed., 2011), *available at* http://www.iea.org/publications/freepublications/publication/WEO2011_GoldenAgeofGasReport.pdf).

122. *See id.* (stating that the IEA assumes "that the costs of production . . . will drop as the North American experience spreads").

123. POLISH INST. OF INT'L AFFAIRS, *supra* note 77, at 16. (noting that a decrease in the cost of production would encourage investment).

124. *Id.*

125. *Id.*

126. *Id.*

127. *Id.*

128. *Id.*

like the United States.[129] By regarding the European Union as a single entity, the IEA has failed to realize that shale gas production can occur on a local or regional level.[130] The Polish Institute of International Affairs believes "in terms of fossil fuel production, and energy mix, member states have an upper hand. Thus, even if shale gas is not going to change the whole EU gas sector, it may become a game changer both locally and regionally."[131]

It is easy to see why many opponents of shale gas development in Poland and Europe are skeptical. Without reliable data, especially in consideration of the trend of overestimation of reserves here in the United States, skeptics argue that Poland and the European Union are running the risk of pursuing shale gas too quickly without truly understanding the sustainability of the project.[132] If Poland wants to garner support both locally and across Europe, detailed economic reports should be compiled to silence at least some of these critics.

B. Environmental Concerns: An evaluation of present environmental implications of hydraulic fracturing and European complaints.

Not only does the development of shale gas in Europe present economic concerns, the proposed projects have also fueled a heated debate between industry and grass-roots environmental groups.[133] Community groups and environmental groups alike are presenting concerns over the "health and environmental effects associated with chemicals used in hydraulic fracturing operations, as well as with the potential

129. *See* POLISH INST. OF INT'L AFFAIRS, *supra* note 77, at 16.

130. *Id.*

131. *Id.*

132. *See* Andrew A. Michta, *Shale Storm*, AM. INTEREST, Jan./Feb. 2012, at 77, 79–80 (noting the possibility that Poland, as the "pioneer in European commercialization of shale gas", may fail to develop a viable regime for shale gas production).

133. *See Hydraulic Fracturing Fluids: Environmental, Health and Engineering Issues*, EXPONENT (Sept. 13, 2010), http://www.exponent.com/hydraulic-fracturing-fluids-in-09-13-20101/ (noting that community groups and environmental groups have begun expressing concerns over the current industry operations).

leakage of fracturing fluids into drinking-water aquifers."[134] Amidst the community outcries, the Prime Minister of Poland, Donald Tusk, assured his country that "'well conducted exploration and production would not pose a danger to the environment.'"[135] Such concerns over the environment, specifically drinking water, have caused France to freeze all shale exploration licenses and ban hydraulic fracturing itself in the entire country.[136] However, Tusk saw no problems with extracting shale gas in Poland: "'[we] have very strict environmental rules, and in Poland we are the most water efficient country . . . [w]ater is very crucial to us and if there is any risk of water contamination, I do not believe we will start any exploitation.'"[137]

In order to understand the environmental concerns more clearly, a brief overview of the additives used in hydraulic fracturing and the fracturing itself is necessary. The process of hydraulic fracturing involves the use of tens of thousands of gallons of water filled with additives, sand, and even debris into the rock formation.[138] This fluid then pushes the oil or gas out of the tiny fissures created by the process and also keeps those fissures open at the same time.[139] Following the "fresh water" flush, an acid flush is performed to clean the perforations near the wellbore to facilitate higher porosity.[140]

In most operations, the fracturing process is closely monitored by personnel in a technical monitoring van to ensure

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134. *Id.*

135. Arthur Neslen, *Polish Villages Eye Shale Gas to Break Coal Addiction*, GUARDIAN (Sept. 21, 2011), http://www.guardian.co.uk/environment/2011/sep/21/polish-shale-gas-coal.

136. *Id.*

137. *Id.*

138. *See* J. DANIEL ARTHUR ET AL., EVALUATING THE ENVIRONMENTAL IMPLICATIONS OF HYDRAULIC FRACTURING IN SHALE GAS RESERVOIRS 12, 15 (2008), *available at* http://www.all-llc.com/publicdownloads/ArthurHydrFracPaperFINAL.pdf; U.S. ENVTL. PROT. AGENCY, HYDRAULIC FRACTURING RESEARCH STUDY 1–2 (2010), *available at* http://www.epa.gov/hfstudy/progressreport12.html.

139. *See* ARTHUR ET AL., *supra* note 138, at 12; HYDRAULIC FRACTURING RESEARCH STUDY, *supra* note 138, at 1.

140. *See* ARTHUR ET AL., *supra* note 138, at 12 (noting that the acid flush facilitates the "flow of fluids").

no contamination occurs.[141] This van is where personnel monitor "all treatment pressures, chemicals, proppant density, fluid velocity, [and] pressures."[142] The team responsible for monitoring consists of thirty or more specialized representatives as well as additional staff from other companies or agencies.[143] This team, in addition to monitoring, can also "serve as an emergency response team should an unforeseen incident occur."[144]

Despite the extensive research and monitoring utilized at most hydraulic fracturing sites, many critics, including the EPA, claim fracking may in fact cause water contamination.[145] On December 8, 2011, the EPA announced for the first time that hydraulic fracturing "may be to blame for groundwater pollution."[146] The EPA in a draft report wrote that the additives and compounds found in the fracking chemicals have been discovered beneath a small community in central Wyoming where fracking operations took place.[147] The residents originally complained because of their well water giving off a strong chemical odor.[148] The EPA eventually tested the water and found low levels of hydrocarbons in their wells.[149] The EPA regional administrator, when asked about the water quality, told a newspaper, the "'EPA's highest priority remains ensuring that Pavilion residents have access to safe drinking water . . . . We look forward to having these findings in the draft report informed by a transparent and public review process.'"[150] The

141. *Id.* at 15.

142. *Id.*

143. *Id.*

144. *Id.*

145. Mead Gruver, *EPA: Fracking May Cause Groundwater Pollution*, USA TODAY (DEC. 8, 2011), http://usatoday30.usatoday.com/money/industries/energy/environment/story/2011-12-08/epa-fracking-pollution/51745004/1.

146. *Id.*; *see also* DOMINIC C. DIGIULIO ET AL., U. S. ENVTL. PROT. AGENCY, DRAFT REPORT: INVESTIGATION OF GROUND WATER CONTAMINATION NEAR PAVILLION, WYOMING (Dec. 8, 2011), *available at* http://www.epa.gov/region8/superfund/wy/pavillion/EPA_ReportOnPavillion_Dec-8-2011.pdf.

147. DIGIULIO ET AL., *supra* note 146, at xi.

148. *Id.*

149. *Id.*

150. Gruver, *supra* note 145.

fracking in this specific instance occurred below the drinking water aquifer and close to the water wells.[151] Typically, fracking operations are performed much deeper in the ground, outside the aquifer and groundwater regions.[152]

The gas field where this incident occurred is currently owned by Encana.[153] A spokesperson for the company cast serious doubt on the EPA draft—"'[the additives discovered in the samples the EPA used] could just have likely been brought about by contamination in their sampling process or construction of their well.'"[154] He also stated, "'This is a probability and it is one we believe [to be] incorrect.'"[155] Other industry experts and politicians on Capitol Hill called the EPA's report "politically motivated and premature."[156] Wyoming's Governor Matt Mead voiced similar concerns stating "'the draft study could have a critical impact on the energy industry and on the country, so it is imperative that we not make conclusions based only on four data points.'"[157]

Despite this draft report and other pieces of evidence from critics expressing concern over possible groundwater contamination, Poland has reassured everyone that its local water laws are sufficient to prevent contamination[158] The prime minister, when asked about *Gasland*,[159] told The Guardian "'[c]ontamination could only come from water which is going [deep] into the ground and then coming out because the gas is 4

151. DIGIULIO ET AL., *supra* note 146, at xi.

152. Gruver, *supra* note 145.

153. *Id.*

154. *Id.*

155. *Id.*

156. Jennifer A. Dlouhy, *EPA Links Fracking at Wyoming Well to Tainted Water*, HOUS. CHRON., Dec. 8, 2011, http://www.chron.com/business/article/EPA-links-fracking-at-Wyoming-well-to-tainted-2391084.php.

157. Press Release, Office of Governor Matt Mead, Governor Mead: Implications of EPA Data Require Best Science (Dec. 8, 2011), *available at* http://governor.wy.gov/media/pressReleases/Pages/GovernorMeadImplicationsofEPA.aspx.

158. Neslen, *supra* note 135.

159. *Gasland* (HBO Documentary 2010). *Gasland* is an HBO documentary outlining one man's experience with hydraulic fracturing in the Barnett Shale. *Id.* In a famous scene, one resident interviewed in the documentary lights their faucet water on fire to show alleged water contamination from hydraulic fracturing. *Id.*

or 5 kilometers below surface level and the deepest water we use, is from 700 to 800 metres [sic].'"[160]

This assurance by the prime minister has not silenced concerns. Environmentalists in several countries are still pushing to restrict hydraulic fracturing.[161] While shale gas plays are still in their infancy, countries like France and Bulgaria are responding quickly amidst environmental concerns.[162] On January 17, 2012, the Bulgarian government released a memorandum indicating its preparation for a "full ban on shale gas drilling due to environmental concerns."[163] Following the release of the memorandum, the government also cancelled an exploration permit given to Chevron for locating and preparing to drill shale gas in the northeastern Bulgaria reservoir.[164] The ban resulted from the widespread calls from its citizens for a moratorium on shale gas exploration "over concerns it may poison underground waters and trigger earthquakes."[165] This moratorium continues a recent trend of European countries either banning or completely limiting shale gas exploration; France banned fracking in July 2011, Britain suspended deep-excavation practice near Blackpool, and the Bulgarian parliament is considering "a total ban hydraulic fracturing . . . in the Balkan country and its Black Sea territorial waters."[166] Regardless of Poland's aggressive public relations campaign with assurances of hydraulic fracturing's safety, skeptics and environmentalists may pose the single greatest threat to companies like Chevron and their efforts to extract the shale gas underneath Poland.[167]

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160. Neslen, *supra* note 135.

161. Marcin Sobcyzk, *Resistance to Poland's Shale Gas Exploration Plans Emerging*, WALL ST. J. (Aug. 5, 2011, 11:38 AM), http://blogs.wsj.com/emergingeurope/2011/08/05/resistance-to-poland's-shale-gas-exploration-plans-emerging.

162. Tsvetelia Tsolova, *Bulgaria Cancels Chevron Shale Gas Permit*, REUTERS (Jan. 17, 2012), http://www.reuters.com/article/2012/01/17/us-bulgaria-shalegas-chevron-idUSTRE80G18J20120117.

163. Tsolova, *supra* note 162.

164. *Id.*

165. *Id.*

166. *Id.*

167. *See Shale Gas Drilling and Hydraulic Fracturing*, CLEAN CURRENTS (June 2011), http://www.cleancurrents.com/index.php/newsroom/88-shale-gas-drilling-

To make matters even more difficult for the Poland ministry, water contamination is no longer the only potential environmental threat posed by hydraulic fracturing. In April 2011, "a tremor measuring 2.3 on the Richter scale was felt in the Lancashire seaside resort, followed by an event in May that measured 1.5 on the scale."[168] Originally, the source of the earthquakes was uncertain.[169] But the company responsible for drilling in the area, Caudrilla, is now admitting their responsibility for causing the tremors.[170] The company published a report, stating "[i]t is highly probable that the hydraulic fracturing of Caudrilla's Preese Hall-1 well did trigger a number of seismic events."[171] The report also quickly dismissed fears surrounding the tremors, stating "there was no threat to people and property in the local area caused by the drilling."[172] While it is uncertain exactly what caused the tremors, Caudrilla mentioned in their report that "'[t]he seismic events were due to an unusual combination of geology at the well site coupled with the pressure exerted by water injection as a part of operations.'"[173] Caudrilla also mentioned "this combination of geological factors was extremely rare and would be unlikely to occur together again at future well sites."[174] Unfortunately for the industry, and Poland specifically, this

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and-hydraulic-fracturing (attributing France's ban of fracking to environmental activist groups and comparing it to a similar situation with activist groups leading to bans of genetically modified organisms throughout the EU).

168. Gary White, *Caudrilla Admits Drilling Caused Blackpool Earthquakes*, TELEGRAPH (Nov. 2, 2011), http://www.telegraph.co.uk/finance/newsbysector/energy/8864669/Cuadrilla-admits-drilling-caused-Blackpool-earthquakes.html. Lancashire is a nonmetropolitan county in North West England. *Lancashire*, FACTFORGE, http://factforge.net/resource/dbpedia/Lancashire (last visited Apr. 21, 2013).

169. *See* White, *supra* note 168 (noting that Caudrilla refuses to take full responsibility, only admitting to a high probability); *Small Earthquake Hits Blackpool*, BBC NEWS (Apr. 1, 2011, 7:19 AM), http://www.bbc.co.uk/news/uk-england/12930915 (indicating possible causes from either post-glacial uplift or tectonic pressure).

170. *Caudrilla: Shale Drilling Caused Quakes*, UNITED PRESS INT'L (Nov. 4, 2011), http://www.upi.com/Business_News/Energy-Resources/2011/11/04/Caudrilla-Shale-drilling-caused-quakes/UPI-44821320401700/ [hereinafter *Caudrilla: Shale Drilling*].

171. White, *supra* note 168.

172. *Id.*

173. *Id.*

174. *Id.*

report did not silence the critics or protesters.[175]

Later, "protestors from [the] antifracking group Frack Off stormed one of Caudrilla's rigs at a drilling site in Hesketh Bank, Lancashire."[176] The protest group set forth its reasons for protest in a statement; "'[t]he action is aimed at highlighting the hypocrisy behind the 'Shale Gas Environmental Summit' . . . in London . . . [which is] trying to spin the rapid expansion into untapped fossil fuel as 'green.'"'[177] Mark Miller, the chief executive of Caudrilla told *The Daily Telegraph* that "drilling would not restart until the regulators had examined their findings."[178] Miller anticipated that drilling would continue in "'some time.'"[179]

The UK government is currently studying the event alongside Caudrilla, "although it has indicated no current plans for new legislation of the shale gas industry."[180] The community in England as a whole was upset by the development, "who have called on the government to introduce a moratorium on development of the resource."[181]

Unfortunately, this earthquake and the protest following it are not unique events. In a recent New York Times article, Henry Fountain discussed nine earthquakes in eight months in a seismically inactive area that occurred recently in Ohio.[182] Ohio is certainly not the only place experiencing such tremors, either, "the events in Youngstown—and a string of other, mostly small tremors in Arkansas, Oklahoma, Texas, British Columbia and the other shale-gas-producing areas—raise the disquieting notion that the technique could lead, directly or indirectly, to a

175. *Caudrilla: Shale Drilling*, *supra* note 170.

176. White, *supra* note 168.

177. *Id.*

178. *Id.*

179. *See id.*

180. ERNST & YOUNG, SHALE GAS IN EUROPE: REVOLUTION OR EVOLUTION? 12 (2011), *available at* http://www.ey.com/GL/en/Newsroom/News-releases/Shale-gas-in-Europe--revolution-or-evolution [hereinafter ERNST & YOUNG].

181. *Id.*

182. Henry Fountain, *Add Quakes to Rumblings Over Gas Rush*, N.Y. TIMES, Dec. 13, 2011, at D1, *available at* http://www.nytimes.com/2011/12/13/science/some-blame-hydraulic-fracturing-for-earthquake-epIdemic.html?pagewanted=all.

damaging earthquake."[183] While scientists agree that the likelihood of that link is extremely remote, small tremors could continue to occur as further well operations take place.[184]

As of yet, however, there is no conclusive evidence of the extent that hydraulic fracturing can impact geological formations to cause seismic events. Experts in the Ernst & Young report found "[l]and subsidence has been shown to occur in areas where mineral extraction activities take place, as the removal of material causes overlying surface rock to sink or collapse."[185] They also noted, however, "this could happen with conventional oil and gas production or mining activities and is not unique to shale gas exploitation."[186]

The potential for groundwater contamination, earthquakes and other environmental calamities is certainly a prime concern that the Polish government needs to address through the creation of scientific reports and continued efforts in public relations. "Maciej Olex-Szczytowski, a special adviser on economics and business to Poland's Ministry of Foreign Affairs[,]" urged Polish policy makers to continue their efforts in an article published about battling an EU regulatory framework.[187] He told reporters "'Poland should defuse local concerns (about shale gas) and counterbalance hostile propaganda'" and added "the country should also closely monitor the European Commission's energy, environment and climate directorates as well as the European Parliament on shale gas matters."[188]

While the public's acceptance of the projects has not been achieved in Poland, or perhaps anywhere else besides North America, Olex-Szcytowski remains confident, stating "'I think we'll get a high level of acceptance (of shale gas) when we have the same, European common standards, a high level of safety, security and quality for environmental interests.'"[189]

183. *Id.*
184. *Id.*
185. ERNST & YOUNG, *supra* note 180.
186. *Id.*
187. *Poland to Veto EU Shale Gas Rules*, *supra* note 20.
188. *Id.*
189. *Id.*

Environmental issues will be the breaking point for social acceptance of shale gas in Europe.[190] The Government needs to promote confidence in the regulation of shale gas activity, and operators need to demonstrate responsibility in accordance with Poland's mining regulations and the European Union's environmental laws.[191] The beginning signs of such efforts can be seen from Poland's own natural gas company, Polskie Górnictwo Naftowe i Gazownictwo (PGNiG).[192] The company started the "Flame of Hope Campaign" to garner support from local communities in Poland.[193] Ernst & Young researched the campaign, reporting "[i]ts purpose is to collect the largest possible number of votes in support of an appeal to Members of the European Parliament (MEPs) to refrain from activities aimed at stopping shale gas exploration and production."[194] The campaign started on September 29, 2011, and already the company has received over 16,000 signatures in support of shale gas exploration.[195]

Whether it requires European regulatory standards, safety standards or environmental interests being adequately protected, it is absolutely paramount that both Poland and the international oil and gas companies being granted licenses gain the favor of at least the local residents in Poland. Without such favor, it is possible the entire project could fail because of EU-wide action.[196] The European public will be waiting patiently for reports from the United States, especially from the

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190. *See* ERNST & YOUNG, *supra* note 180, at 14 (explaining that there is a real challenge in gaining public support because of environmental concerns and that "environmental concerns are likely to bolster public support for a strengthening of the regulatory regime governing shale gas development").

191. *See Poland to Veto EU Shale Gas Rules*, *supra* note 20 (stating that Poland should alleviate local concerns and "closely monitor the European Commission's energy, environment and climate directorates").

192. ERNST & YOUNG, *supra* note 180, at 14.

193. *Id.*

194. *Id.*

195. *Id.*

196. KPMG, CENTRAL AND EASTERN EUROPEAN SHALE GAS OUTLOOK (2012) 30, *available at* http://www.kpmg.com/Global/en/IssuesAndInsights/ArticlesPublications/shale-gas/Documents/cee-shale-gas-2.pdf (noting that Bulgaria banned fracking because of public opposition).

EPA, concerning "the environmental impact of shale gas production" to be published before they will give their entire support.[197]

IV. SETTING THE STAGE FOR POTENTIAL DISASTER THE EUROPEAN UNION'S ENERGY GOALS AND PLANS COMPARED TO THE ULTIMATE AND SWEEPING PLAN DEVELOPED BY THE POLAND PRESIDENCY.

A. The short, medium and long term priorities of the European Energy Strategy and the current sentiments of the European Council, Council of the European Union, the European Commission, and The European Parliament.

In February 2011, the European Council held a session in order to determine the primary energy topics to be discussed officially in the European Union's political debate.[198] The conclusions of the meeting, which were determined by the heads of state, indicated the need for further strengthening of the security of energy supplies requiring an assessment of Europe's potential for the sustainable extraction and use of conventional and nonconventional (shale gas and shale oil) fossil fuel resources.[199] While the further strengthening of security of energy supplies largely through fossil fuels is a broad goal, it is obvious the meeting was a success for shale gas development in Poland.[200] According to the Treaty on the European Union, the decisions made by heads of state in European Council meetings determine the European Union's political topics and priorities.[201] Therefore "the issue of unconventional gas, including shale gas, was officially incorporated into the European Union's political debate."[202] Two other communications by the European Commission, "*Energy 2020—A Strategy for Competitive, Sustainable and Secure*

197. ERNST & YOUNG, *supra* note 180, at 14.

198. POLISH INST. OF INT'L AFFAIRS, *supra* note 77, at 19.

199. European Council, Conclusions, 4 February 2011, EUCO 2/1/11 3, *available at* http://www.consilium.europa.eu/uedocs/cms_data/docs/pressdata/en/ec/119175.pdf.

200. *See id.*; POLISH INST. OF INT'L AFFAIRS, *supra* note 77, at 19.

201. POLISH INST. OF INT'L AFFAIRS, *supra* note 77, at 19.

202. *Id.*

Energy" and "*Energy Infrastructure Priorities for 2020 and Beyond"* also established the priority of discussing current and future development of unconventional gas technologies, specifically in Poland.[203]

The Council of the European Union also adopted relevant conclusions defining the European energy strategy.[204] The EU Council for Transport, Telecommunications and Energy "defined short-, medium-, and long-term (2020–2050) priorities for the European energy strategy."[205] The Council stated in one of its draft council conclusions that, "'[i]n order to further enhance its security of supply, the European Union's potential for sustainable extraction and use of conventional and unconventional (e.g., shale gas, shale oil) fossil-fuel resources should be assessed, *in accordance with existing legislation on environment(al) protection*.'"[206] This conclusion draws two inferences. The EU Council combined the energy goals of the European Union, supply and sustainability, with the potential production of unconventional gas in Poland.[207] However, while it is important that such a link was made, the comment implying that such unconventional gas production would be regulated with existing EU legislation on environmental protection has sparked an emerging debate between the Poland and antifracking EU countries.[208] The presidency of the European Union was taken over by Poland during the second half of 2011.[209] The presidency is "supposed to play the role of neutral moderator," within EU discussions.[210] However, Poland immediately took the topic of shale gas and shale gas production

203. *Id.*

204. *Id.*

205. *Id.*

206. *Id.* (emphasis added) (citation omitted).

207. POLISH INST. OF INT'L AFFAIRS, *supra* note 77, at 19.

208. *The European Parliament Votes on Shale Gas: What Did We Learn?*, SHALE GAS EUR. (Nov. 23, 2012), http://www.shalegas-europe.eu/en/index.php/news-room/blog/entry/the-european-parliament-votes-on-shale-gas-what-did-we-learn (noting Poland's push to reject a moratorium on fracking in favor of responsible recovery techniques).

209. POLISH INST. OF INT'L AFFAIRS, *supra* note 77, at 19.

210. *Id.*

to the very top of the internal political agenda.[211] Poland's presidency has been anything but neutral throughout the energy policy discussions. The European Commission is responsible for publishing the Energy Strategy for the European Union as a whole.[212] In November 2010, the Commission published its Energy Strategy for 2011–2010.[213] "Its declared goals were as follows: fulfilment of climate policy objectives, completion of the single energy market, development of electricity and gas transmission networks, implementation of a strategic plan for the development of energy technologies (SET-plan) and the enhancement of external energy policy."[214] More importantly, the commission also called for member states to start utilizing their own resources, to ensure energy security both locally and nationally.[215] When discussing the need for member states to use their own resources, the European Commission also discussed "developments in technology that enable the exploitation of new resources in an economically and ecologically rational way."[216] This discussion focused mainly on unconventional gas resources that were previously unattainable because of technological restraints.[217] Unfortunately, the use of indigenous resources in a manner that would provide energy sustainability for Europe is a completely new and foreign idea to policy-makers.[218] Until very recently, "the Commission . . . took

211. *Id.*

212. *See id.* at 20 ("[T]he Commission published the Energy Strategy for 2011–2020."). Additionally, the Commission also ensures that member states abide by the EU energy laws. *Enforcing EU Energy Law*, EUR. COMM'N, http://ec.europa.eu/energy/infringements/index_en.htm (last visited Apr. 1, 2013).

213. *Id.*

214. *Id.*

215. *See Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions Energy 2020: A Strategy For Competitive, Sustainable and Secure Energy*, at 6–7, 10–11, COM (2010) 639 final (Nov. 10, 2010) [hereinafter *Energy 2020 Communication*] (discussing the necessity for all EU Member States to develop new energy efficiency strategies and listing several actions Member States could take).

216. POLISH INST. OF INT'L AFFAIRS, *supra* note 77, at 20.

217. *Id.*

218. *See id.* (stating "The idea of shirking domestic supplies has been so embedded in European debate that it is really difficult now to overcome a certain mental inertia responsible for a complete negligence to the EU's own fossil resources.").

a very cautious position [towards shale gas] with the official argument of a lack of sufficient knowledge."[219] Since the end of 2010, the Commission has been paying very close attention to the developments in Poland and the rising possibility of shale gas becoming the primary energy source for Europe.[220]

In a recent interview given to the Polish daily, "Gazeta Wyborca," the EU Commissioner for Energy emphasized the importance of shale gas in Europe.[221] The commissioner stated that shale gas is in the interest of the European Union, and it could potentially allow for Poland to reduce its dependence on imports.[222]

The European Commission is also responsible for establishing the conditions under which member countries may grant permits for the exploration and production of hydrocarbons in the entire region.[223] Very recently, the European Commission filed a complaint against Poland in the Court of Justice alleging Poland's failure to comply with obligations.[224] The directive outlines the conditions for "granting and using authorizations for the prospection, exploration and

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219. *Id.*

220. *See id.* at 20–21 (noting unconventional gas resources may play an important, complementary role in the EU's energy balance).

221. *See id.* at 20.

222. POLISH INST. OF INT'L AFFAIRS, *supra* note 77, at 20.

223. PHILIPPE & PARTNERS, FINAL REPORT ON UNCONVENTIONAL GAS IN EUROPE 23 (2011), *available at* http://ec.europa.eu/energy/studies/doc/2012_unconventional_gas_in_europe.pdf.

224. Case C-569/10, Comm'n v. Republic of Pol., 2011 O.J. (C 46) 6. The Commission alleged:

> [Poland did not adopt] the measures necessary to ensure that access to activities relating to the prospection, exploration and production of hydrocarbons should be free of all discrimination as between interested undertakings and that the authorizations to carry out those activities should be allocated in accordance with a procedure under which all interested undertakings are able to submit applications and in accordance with criteria which are published in the *Official Journal of the European Union* prior to the beginning of the period in which applications must be submitted.

Id. The Commission further alleged that "Poland has failed to comply with obligations under Articles 2(2), 3(1) and 5(1) and (2) of Directive 94/22/EC of the European Parliament and of the Council of 30 May 1994 on the conditions for granting and using authorisastions for the prospection, exploration and production of hydrocarbons." *Id.*

production of hydrocarbons."[225] Shortly after the complaint was filed in the Court of Justice, the European Commission announced its intention to prepare a legal summary with the purpose of "reviewing EU and national regulations on shale gas."[226] The Commission will review the regulations of France, Germany, Poland, and Sweden "because of the number of licenses obtained, and in the case of Sweden, because of its experience in shale-gas exploration."[227] France recently passed a moratorium on shale gas exploration, making its involvement in EU regulations troublesome for Polish lawmakers.[228]

Most recently, the Commissioner for the Environment spoke on behalf of the Commission about shale gas and EU environmental regulations.[229] He "pointed out that shale gas operators must comply with requirements under the EU regulations on registration, evaluation and authorization of chemicals (REACH) and the establishment of a European Chemicals Agency."[230] The Agency itself reviews the hydraulic additives used in the fracking process to prevent environmental contamination.[231] The Commissioner, in response to calls asking for suspension of exploration emphasized that shale gas exploration and production will be regulated "according to the treaties" which underline "the establishment of the conditions to exploit energy sources remains at the national level."[232] The EU Commission published a detailed report on shale gas exploration in the European Union in 2012.[233] This report will likely set the tone for the challenges Poland will face moving forward.

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225. Directive 94/22/EC of the European Parliament and of the Council of 30 May 1994 on the Conditions for Granting and Using Authorizations for the Prospection, Exploration and Production of Hydrocarbons, 1994 O.J. (L 164) 3, 3.

226. POLISH INST. OF INT'L AFFAIRS, *supra* note 77, at 21.

227. *Id.*

228. *Shale Gas Likely to be Banned in France*, EURACTIV (Dec. 23, 2011), http://www.euractiv.com/energy/shale-gas-drilling-banned-france-news-503999.

229. POLISH INST. OF INT'L AFFAIRS, *supra* note 77, at 22.

230. *Id.*

231. *Id.*

232. *Id.*

233. *See* Ewa Krukowska, *EU Has Adequate Rules on Shale Gas Exploration, Study Shows*, BLOOMBERG (Jan. 27, 2012), http://www.bloomberg.com/news/2012-01-27/eu-has-adequate-rules-on-shale-gas-exploration-study-shows-1-.html.

B. Poland state law compared to EU regulations.

Poland Geological and Mining Law grants benefits, licenses and permits to companies which explore for hydrocarbons.[234] A corporation, which disclaims a mineral deposit being the property of the State and prepares the geological data necessary for the granting of a mining concession, may establish its own mining infrastructure, with priority over other parties to the minerals.[235] Foreign companies find this arrangement preferable because the bureaucratic process is simplistic and the priority system allows corporations to invest serious capital without fear of competition.[236]

The first step in the process for prospecting and exploration of hydrocarbons is that the "applicant is required to acquire a mining usufruct."[237] The mining usufruct is a written agreement with the State Treasury.[238] The document specifies the rights and privileges of both the party and the government and regulates the activities that will be conducted on the surface and subsurface.[239] "The [a]greement also specifies the amount of consideration for the mining usufruct right."[240]

Once the usufruct is obtained, the party must obtain a concession in order to prospect and explore hydrocarbons.[241] The concession is granted if the company is properly registered in Poland and meets all requirements imposed by Geological and Mining Law.[242] The concession will include an outline of the geological and surface impacts of the operation.[243] The Polish

234. Wojciech Bagiński, *Shale Gas In Poland—The Legal Framework for Granting Concessions for Prospecting and Exploration of Hydrocarbons*, 32 ENERGY L.J. 145, 146, 150 (2011).

235. *Id.* at 148–49.

236. *See id.* at 146 (speculating that large companies, after developing the necessary and accurate geological documentation, may demand priority and preference over other parties).

237. *Id.* at 148.

238. *Id.* at 149.

239. Bagiński, *supra* note 234, at 149.

240. *Id.*

241. *Id.* at 150.

242. *Id.*

243. *See id.* (discussing the contents of the concession application as set out by article 18 of the Geological and Mining Act).

authority may refuse to grant a concession because the outlined activities affect the environment or real estate surrounding the project.[244] There is no specific definition of "environmental damage," but it is defined broadly to give maximum discretion to the granting authority to accept or reject the concession.[245]

The EU regulations, on the other hand, are far less streamlined and are "consistently aiming to increase environment[al] quality and cleanliness standards . . . providing special protection to the species of flora and fauna in danger of extinction, due to human activity."[246] These objectives are accomplished through the public administrative bodies of the European Union but also through regulations imposed on private entities which can affect the environment.[247] One primary statute that would seriously affect foreign corporations seeking to find hydrocarbons in Poland is Directive 2004/35/CE on environmental liability.[248]

This directive "make[s] polluters take care of the natural environment by rationalizing their business activity causing threats or damage to the natural environment."[249] The directive acts like a new legal instrument that works in conjunction with those already existing, to fight natural environmental pollution by imposing financial responsibility on entities that caused the damage.[250] The types of damages an entity may be liable for, among other things, are: (1) the collection of urban wastes, (2) the "insertion of waste to water or soil[,]" and (3) "the drawing

244. *Id.* at 151.

245. *See* Bagiński, *supra* note 234, at 151. (noting that concessions may be denied for things like poor waste disposal plans or general "requirements of environmental protections").

246. BEATA BALAS-NOSZCZYK, LOVELLS LLP, REGULATIONS CONCERNING ENVIRONMENTAL PROTECTION IN POLAND IN COMPARISON WITH EUROPEAN UNION LAW 5 (2008), *available at* http://www.hoganlovells.com/files/Publication/15c5608b-5749-4eea-adcf-a1cc7f578b79/Presentation/PublicationAttachment/b50e23f8-7765-4bcd-9d28-a60b883689a2/resAAC0E802F0CF4DDFB5802F26F2B54E92.pdf.

247. *Id.*

248. *See id.* at 6 (describing Directive 2004/35/CE as based on the principle that "the polluter should pay").

249. *Id.*

250. *Id.*

and channeling of ground and underground water."[251] Drawing from the previous section of this paper, the use of water in hydraulic fracturing operations will obviously be implicated here. This statute may require operators to allocate "budgets of additional funds to cover damage[s] caused or the necessity of insurance."[252]

Another primary statute that could severely affect drilling operations in Poland includes (EC) No. 166/2006 of the European Parliament and of the Council of 18 January 2006.[253] This statute requires entities conducting operations to draft annual reports outlining waste as provided in the Environmental Protection Act.[254] Operators who exceed the pollution thresholds outlined in the Environmental Protection Act are obliged under the law to send data.[255] The reports published must be made available to the public via the internet by the State Register of Poland.[256]

In order to motivate foreign corporations to draft these annual reports, the legislature "provided for monetary penalties to be imposed by relevant Voivodship environmental protection inspectors."[257] A penalty of up to 10,000 PLN can be imposed on an operator who exceeds the pollution threshold but fails to file a report.[258] An entity which files a report that is incomplete, lacking in reliable data, or not comprehensive, can be fined up to 5,000 PLN.[259] Therefore, it will be important for operators conducting business in Poland to identify those pollution thresholds to determine if they exceed them.[260] If they do exceed

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251. *Id.* at 7.

252. BALAS-NOSZCZYK, *supra* note 246, at 8.

253. Regulation (EC) No 166/2006, of the European Parliament and the Council of 18 Jan. 2006 Concerning the Establishment of a European Pollutant Release and Transfer Register and Amending Council Directives 91/689/EEC and 96/61/EC, 2006 O.J. (L 33) 1; *see also* BALAS-NOSZCZYK, *supra* note 246, at 9–10 (noting additional reporting requirements under the regulation).

254. BALAS-NOSZCZYK, *supra* note 246, at 9.

255. *Id.*

256. *Id.*

257. *Id.*

258. *Id.* at 9–10.

259. *Id.* at 10.

260. BALAS-NOSZCZYK, *supra* note 246, at 10.

them, then an annual report must be filed in order to avoid monetary fines.[261]

While these two EU regulations already exist and will likely affect shale gas exploration and production, there is a distinct possibility of the EU Commission drafting a shale gas specific regulation that would further regulate these operations.[262] These regulations would likely focus on the prevention of water contamination in order to counter environmental concerns about shale gas.[263] While Polish officials are urgently trying to prevent a crippling environmental regulation from being passed, there is a distinct likelihood that the European Union will control at least some aspects of the exploration and production process.[264]

C. Current Events regarding EU Shale Gas Regulation

On January 27, 2012, a report published by the European Commission concluded that current regulations and Poland's legal framework are sufficiently able to control shale gas exploration and extraction without the need for further European Union intervention.[265] The report, published by a Belgian law firm, concentrated on Poland, Germany, Sweden and France.[266] These EU-member countries were selected because of their recent advancements in shale gas exploration.[267]

After carefully examining the water, environmental and even earthquake issues expressed by many critics of the hydraulic fracturing process, the report concluded that the activity was already subject to EU and national laws and

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261. *Id.* at 9–10.

262. *See Poland to Veto EU Shale Gas Rules*, *supra* note 20 (noting Polish intention to veto further regulatory action).

263. *See id.* (noting that France has already banned shale gas exploration due to fears of groundwater contamination and air pollution caused by the fracturing process).

264. *See id.* (reporting that a special adviser to Poland's Ministry of Foreign Affairs has declared that Poland will veto EU-wide regulation of shale gas).

265. *EU: Shale Gas Extraction Is Well Regulated*, PUB. SERV. KNOWLEDGE NETWORK (Feb. 2, 2012), http://www.publics.bg/en/publications/121/EU_Shale_gas_extraction_is_well_regulated.html.

266. *Id.*

267. *Id.*

regulations. The report states "[w]ater protection issues, for instance, which have been raised an issue by shale gas detractors, are already covered by EU legislation under the Water Framework Directive, the Groundwater Directive and the Mining Waste Directive."[268] The report went on further to say ". . . the use of chemicals is covered by the REACH regulation."[269] However, the spokesperson for the European Commission said, "'[i]t is a new technology and we do not have a specific legislation on shale gas, because it is so new.'"[270]

The report ended by concluding that shale gas activities were simply too small at the moment to necessitate EU-wide regulation. The study said, "'[n]either on the European level nor on the national level have we noticed significant gaps in the current legislative framework, when it comes to regulating the current level of shale gas activities.'"[271] While the study itself was very persuasive for many countries, Bulgaria ignored the evidence presented and began drafting legislation banning the practice in response to thousands of citizens protesting against shale gas ventures.[272]

While the European Commission report was a success, internal matters may threaten Poland's ability to conduct the shale operations independent of EU oversight or regulation. Recently, the Polish internal security agency responsible for preventing bribery and other fraudulent acts detained seven individuals.[273] The individuals were detained on suspicions of bribery related to the granting of shale gas exploratory permits.[274] The seven people detained included three from the Environment Ministry, one from the Polish Geological institute, and three businessmen representing companies holding licenses

268. *Id.*

269. *Id.*

270. *Id.* (quoting European Commission spokesperson Marlene Holzner).

271. *Shale Gas Extraction Is Well Regulated*, *supra* note 265.

272. *Id.*

273. Maciej Onoszko, *Poland Detains 7 Suspected of Shale Gas Corruption*, REUTERS (Jan. 10, 2012), http://www.reuters.com/article/2012/01/10/us-poland-shale-idUSTRE8091NP20120110.

274. *Id.*

for shale gas exploration.[275] No further developments have been released, nor have the names of the companies involved.[276] Needless to say, critics of the drilling operations will use this as ammunition to fuel their efforts and gain more supporters.

V. CONCLUSION

Despite the road bumps ahead that Poland will surely face, shale gas and hydraulic fracturing could potentially change the European energy landscape forever. Given the current estimates of shale gas located underneath Poland, natural gas could finally free Poland, and other European nations, from their dependence on Russian gas. Coupled with desire from investors and the overwhelming data indicating that Europe will face a severe gas shortage within the next few decades, Poland will be in a position to play a vital role in shaping Europe's energy future. Ultimately, Europe could free themselves from Russia's grip and become an exporter of natural gas to supply the rest of the world.

Despite its current success with the EU report signaling a trend towards a lack of EU-level regulations for now, Poland will face obstacles along its journey. Because hydraulic fracturing is a new technology, people are going to be skittish and irrational. Economic forecasts are certainly optimistic and may present more hope than objective data. Yet, these forecasts cannot be cast aside for lacking data that simply is not available to the industry or experts at this time. Poland will face many difficulties: environmental groups protesting their drilling activities, the industry being forced to learn methods to avoid creating nuisances from drilling activities, and maintaining transparency while also abiding by all environmental regulations. One mistake could cause the entire project to fail. Poland must remain vigilant in its efforts. Hydraulic fracturing around the world, specifically in the United States and Europe, could face severe threats of regulation because of the environmental critics. However, there is no objective data proving that such practices actually contaminate the

275. *Id.*

276. *Id.*

groundwater at drilling sites. Critics are relying on a hastily-published EPA report based on one case study and largely anecdotal evidence from a documentary published by HBO. Poland has the opportunity to sway the public in its favor now, and the Flame of Hope Campaign is an important start towards such objective.

It is very important for Chevron and other large oil and gas companies to proceed slowly. It would be wise to maintain only exploratory wells until 2014 in order to assess the changing political climate. In 2011 Poland held the six-month rotating presidency in the European Union.[277] While there is no evidence, it is fair to assume that this position asserted some influence on the report released by the European Commission in 2012. In the next five years, the following countries will retain the rotating EU presidency: Denmark, Cyprus, Ireland, Lithuania, and Greece.[278] Investors will need to perform detailed cost benefit analyses in order to assess the risk of potential regulations against the potential short-term profits they could receive from initial drilling efforts. Further, investors will need to continue their efforts in garnering support from local officials and their constituents.

I predict that EU regulation will happen once the hydraulic fracturing operations become larger scale. The European people are more sensitive than Americans to hydraulic fracturing because their countries do not have a history of such practices.[279] Many of the mistakes made by companies in America because of the learning process surrounding hydraulic fracturing will not be tolerated in Europe. I suspect that drilling fluid disclosure regulations followed by stricter shale-gas-oriented water contamination regulations will also be passed as this trend is beginning in the United States. Companies will need to account for the added costs associated with meeting these regulations.

Most importantly, as this Comment discussed, Polish

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277. *Poland to Veto EU Shale Gas Rules*, *supra* note 20.

278. Council Decision 2007/5, Annex, 2007 O.J. (L 1/12) (EC).

279. *Fracking Here, Fracking There*, ECONOMIST, Nov. 26, 2011, at 75, *available at* http://www.economist.com/node/21540256.

lawmakers and the industry itself must continue to seek the support of the public at large. If they can extinguish the fears of water contamination and the other threats surrounding hydraulic fracturing, and instead bolster the benefit of such practices, Poland could become the energy capital of the European continent. The current laws and regulations are sufficient to protect the public welfare, but the sentiment of the public will always reign supreme.