

GLOBAL SHALE GAS AND THE ANTI-FRACKING MOVEMENT

Developing Union Perspectives and Approaches



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ADVANCING WORKER RIGHTS AND COLLECTIVE REPRESENTATION

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Trade Unions for Energy Democracy (TUED) is a global, multi-sector initiative to advance democratic direction and control of energy in a way that promotes solutions to the climate crisis, energy poverty, the degradation of both land and people, and responds to the attacks on workers' rights and protections.

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Global Shale Gas and the Anti-Fracking Movement

Developing Union Perspectives and Approaches

This paper has been prepared to assist unions and their close allies who wish to better understand the impacts of shale gas drilling, or “fracking,” and want to develop a position or approach to fracking that protects workers, communities, and the environment. It begins with a summary of the shale gas industry’s global expansion, and then looks at the opposition to fracking that has emerged in a number of key countries. A preliminary profile of the anti-fracking movement highlights the goals and characteristics of this movement as well as the issues that lie at the heart of the resistance. The paper

concludes by attempting to bring together the available information on unions’ perspectives and positions on this increasingly important issue. It also raises for discussion the prospect of unions giving support to a global moratorium on fracking based either on the precautionary principle (the health and environmental effects are not fully understood or have still to be adequately addressed) or on the more definitive assessment that fracking can never be sufficiently safe in terms of its impact on health and the environment and should therefore be stopped altogether.

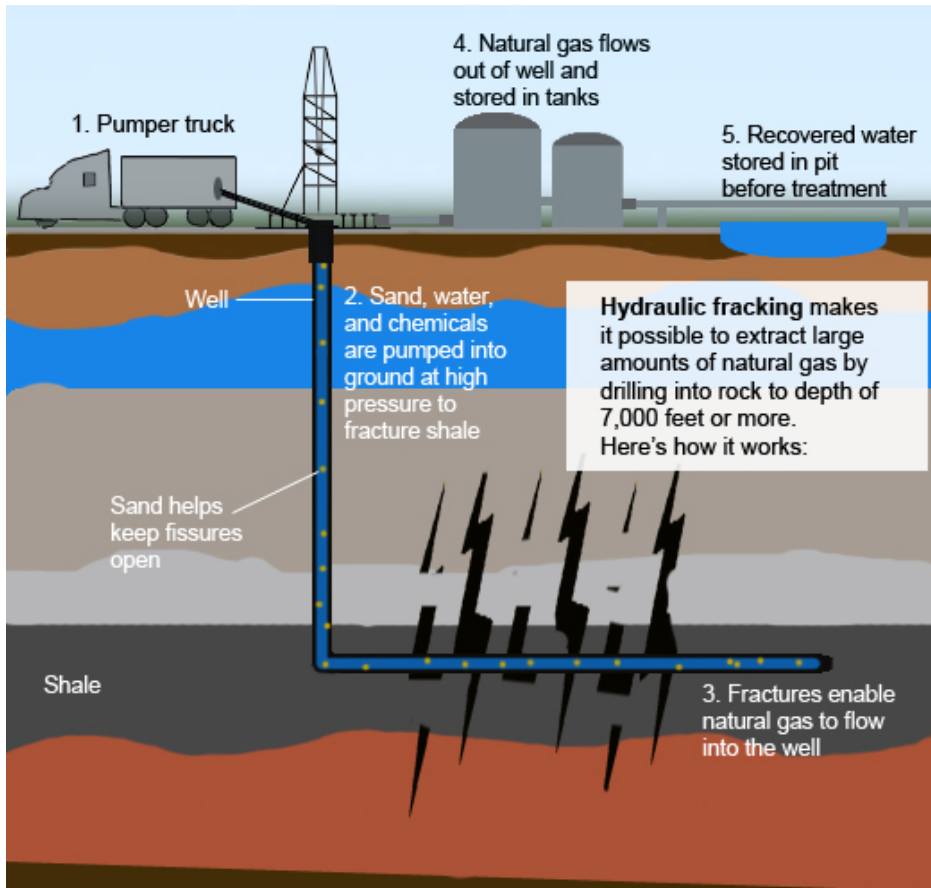
Overview

Hydraulic fracturing, horizontal drilling, or “fracking,” as it is commonly called, pumps large volumes of water, sand, and chemicals into a gas well to fracture or crack the shale and other tight rock formations, releasing gas into the wells. The process typically involves drilling approximately three kilometers below the earth’s surface, and then one to three kilometers horizontally. Hydraulic drilling has been used since the 1940s but its use has increased significantly during the last ten years due to the addition of directional and horizontal drilling techniques, which allows the oil and gas industry to access previously out-of-reach shale reserves.¹

The production of shale gas by way of hydraulic fracturing and horizontal drilling (fracking) has already had a major impact on both ener-

gy and ecology in the United States. From its birthplace in the Barnett Shale in East Texas in 2002, fracking has spread to 17 states, with more than 80,000 wells drilled or permitted since 2005. Moreover, the oil and gas industry is aggressively seeking to expand fracking to new states—including New York, California, and North Carolina.²

In the last few years fracking has also gone global. The discovery of large volumes of new and potentially exploitable shale gas deposits has led to exploration and drilling in a growing number of countries.³ The U.S. remains the clear leader in shale gas development and use but shale gas production is already underway in Canada (where it has been happening for some time) and exploration and/or drilling is either



Graphic: Laura Mihelich/MEDILL Reports, Northwestern University

proposed or happening in Argentina, Australia, Austria, China, France, Germany, Hungary, India, Italy, the Netherlands, Poland, Romania, Spain, Sweden, Switzerland, Ukraine, and the United Kingdom.⁴ The practice has also been promoted globally by the U.S. Department of State's 2010 Shale Gas Initiative, which urges the adoption of legislation favorable to fracking. The Initiative claims that shale gas is a "lower carbon fuel option" and thus can help in the fight against climate change.⁵

Water Contamination

The evidence strongly suggests that fracking poses serious dangers to workers, communities, and the natural environment with particu-

larly severe impacts in terms of water contamination and access. Fracking just one well can use between 2 million to 5.6 million gallons of freshwater (7.6 million liters to 21 million liters) and produce between 420,000 to 2.5 million gallons of wastewater (1.6 million liters to 9.4 million liters), known as "produced" water or "flowback," which is water mixed with frack fluid.⁶ The remaining high volume mix of non-biodegradable waste remains underground and under pressure. Freshwater aquifers, waterways and drinking wells can, and have been, contaminated when hydraulic fracturing inadvertently pierces and then leaks gas and drilling chemicals into fresh water drinking supplies. In fact, the force from hydraulic fracturing—both the drilling itself and the reinjection of "flowback" or "produced water" into old wells—is so

great that it has caused earthquakes in several regions.⁷ The wastewater produced by fracking has also been a source of water contamination—water treatment plants have yet to find a way to safely remove the chemicals used in fracking.⁸ This means that fracking chemicals are circulated back into natural waterways or drinking water supplies with seriously negative implications for public health and the environment.⁹ In some cases, wastewater treatment plants have refused to accept fracking wastewater because they cannot properly treat it and this has incited illegal dumping of wastewater on roads or in fields.¹⁰

Worker Health and Safety Concerns

In addition to water and chemicals, silica sand is injected in fracking wells to act as a “proppant,” keeping underground fractures open to allow natural gas to flow to the surface of the well. Exposure to silica causes silicosis, lung cancer, and other debilitating diseases and thus makes fracking a major health and safety concern for workers in the fracking industry and for nearby communities.¹¹ Large quantities of silica sand are used in fracking—each fracking well uses about four million pounds, or 1,800 metric tons, of silica sand.¹² The National Institute for Occupational Safety and Health has monitored workers’ exposure to silica at eleven different fracking sites in five U.S. states. Of the 116 samples they collected 47% showed silica exposure levels greater than is acceptable under U.S. Occupational Health and Safety Administration’s (OSHA) rules; 79% showed silica exposure levels higher than is permissible under the more robust National Institute for Occupational Safety and Health recommendations; and 9% of the samples showed silica exposure levels ten times higher than is permissible under OSHA rules.¹³

The emissions and climate impacts of fracking are equally serious. Scientific data strongly sug-

gests that shale gas (in full life-cycle terms) is more greenhouse gas (GHG)-intensive than coal due to methane leakage from drilling sites.¹⁴ Moreover, the growing presence of shale gas in the global energy system is undermining renewable energy (particularly in the U.S.), thus exacerbating fracking’s likely climate effects.

The Anti-Fracking Movement

These and other concerns have sparked an opposition movement to fracking that is diverse, vibrant, and global. The movement’s goals range from the desire to regulate fracking in order to make it safe (or safer) to the wish to ban fracking completely. The strategies and tactics of the organizations engaged in the movement vary somewhat but anti-fracking organizations have, until recently, been mainly local groups trying to influence local political processes.¹⁵ However, the movement’s effectiveness in securing moratoria on fracking in several countries (as well as a large number of regions, cities, and towns) is solidifying the movement on a global level, so much so that the gas industry has itself begun to monitor the movement’s growth. One industry-sponsored study refers to “hostile lobby groups” that “exert disproportionate influence over government policy, [create] political instability delay[ing] essential reforms, contracts are subject to uncertainty or occasional change, elements of the infrastructure are deficient, or the activities of unions or protest groups impede operations.”¹⁶

Unions around the world are beginning to pay attention to fracking’s effects on workers, communities and the environment. However, even in the U.S. where fracking is most developed, as of late 2013 many unions had yet to take a position. However, there are exceptions. Some unions are actively supporting fracking, and others are doing the opposite. For examples, the Building and Construction Trades division of the AFL-CIO is openly engaged in a pro-fracking alli-

ance with the oil and gas industries (see below) in both the U.S. and Canada, despite numerous studies showing that the oil and gas industry consistently and dramatically overestimates the number of jobs and economic benefits that will be produced by fracking.¹⁷ On the other hand, two of Canada's largest unions, CUPE and UNIFOR, have called for a national moratorium on fracking.¹⁸ In the UK, the TUC 2012 annual conference passed a resolution that stated, "The principle of precaution should be applied when developing new energies and the health of people and the environment should be put before

profit." Effectively, the motion calls for a moratorium on the fracking method of gas extraction "unless proven harmless for people and the environment."¹⁹

Given the push on the part of the gas industry to drill for shale gas in many parts of the world, it will be increasingly important for unions to fully understand its impact on workers, unions, communities, and the environment and to develop positions and an approach to fracking that will protect workers and strengthen the trade union movement over the long-term.

The Global Growth of Shale Gas Hydraulic Fracturing

Hydraulic Fracturing (fracking) for shale gas is rapidly becoming a global phenomenon. The known amount of technically recoverable oil and gas from shale formations has increased by a factor of ten in the past two years and several countries seem determined to follow the lead of the U.S.²⁰

In a major 2011 study, the International Energy Agency (IEA) asked *Are We Entering a Golden Age of Gas?*²¹ The IEA offered a scenario where natural gas use will increase 50 percent by 2035, with 35 percent of this growth coming from unconventional sources like tight gas, coal bed methane, and shale gas. The term "unconventional" refers to the techniques used to extract difficult to reach reserves as well as the source of those reserves.²²

A June 2013 study sponsored by the U.S. Energy Information Administration (EIA) and compiled by Advanced Resources International (ARI) provided further data to support the "golden age" hypothesis. The *World Shale Gas and Shale Oil Resource Assessment* calculated an estimated 7.3 trillion cubic feet of "technically recoverable"

shale gas resources.²³ More than 41 countries are thought to have significant-to-large supplies and a total of 137 shale formations have been cited for exploration and development but two-thirds of the assessed, technically recoverable, shale gas is concentrated in just six countries: Algeria, Argentina, Canada, China, Mexico, and the U.S.²⁴

The global expansion of shale gas development is being driven in part by significant advances in horizontal and directional drilling, well stimulation technologies, and advances in the cost effectiveness of these technologies. "Hydraulic fracturing" is the most significant of these new technologies, and it is this knowledge that has triggered the exploration of shale gas resources around the world.²⁵ What was once impossible is now being pursued on a global scale.

The Impact of Shale Gas on Renewable Energy in the U.S.

Most people assume that the rise in the development of shale gas simply displaces fossil fu-

els. The reality is that drilling for shale gas has had a negative impact on renewable energy in the U.S.²⁶ Citing low gas prices as a major factor, Siemens announced it was laying off 615 wind energy job in Florida, Iowa, and Kansas in September 2012.²⁷ A study of the state of Ohio found that the development of shale gas has dealt a huge blow to the state's wind industry, despite Ohio being a national leader in its development.²⁸ In 2010, the state possessed 106 wind power supply chain businesses and 63 solar power supply chain businesses, employing 9,000 workers. Since then, many of these companies have declared bankruptcy, and thousands of workers have lost their jobs.²⁹ Proponents of natural gas as a "bridge fuel" to renewable energy argue that increased availability of natural gas would displace dirtier fuels like coal. The use of coal has indeed declined in the U.S. as power stations switch to gas, but cheap gas, coupled with the threatened expiration of a government tax credit, led to 10,000 layoffs in the wind sector between 2009-2012.³⁰

Some analysts believe that the negative impact of gas on the growth of renewable energy will only be temporary and over the longer term renewable energy will displace both coal and gas for power generation.³¹ But given the need for rapid development of renewable energy in order to meet the kind of emissions reductions levels proposed by the scientific community, any delay or setback to renewable energy is likely to have serious repercussions.

Multinationals Move In on Gas

To understand the role that multinational corporations are now playing in the shale gas industry, it is important to look at what has happened in the U.S. Small, independent, non-union companies were once situated on the cutting-edge of the shale gas boom, but these have since been displaced by more powerful

players. Exxon-Mobil bought out XTO in 2009 for a total of \$41 billion. In 2010, seven further shale gas transactions, each ranging from \$1 to \$5 billion, were completed in North America, according to the IEA. Shell purchased a \$4.7 billion stake in Virginia-based East Resources and Chevron purchased a \$4.3 billion stake in Pittsburgh-based Atlas Energy. In May 2011, Chevron announced it was buying 228,000 acres of leases for drilling from Chief Oil & Gas LLC and Tug Hill Inc. in southwestern Pennsylvania. Hess reportedly leases over 80,000 acres with the Northern Wayne Property Owners Alliance, a Pennsylvania landowners' group.³²

By 2012, four companies—Halliburton Co., Schlumberger Ltd., Baker Hughes Inc.'s BJ Services unit, and Frac Tech Services LLC—provided more than half of North American fracking services. Halliburton topped the group with 18% of the market, followed by Schlumberger at 13%, BJ Services with 12% and Frac Tech with 11%.³³

The global shale gas expansion is today being driven politically and economically by multinationals and partnerships between the larger companies. For example, Chinese companies (such as the Chinese National Offshore Oil Corporation—CNOOC, and PetroChina) have entered into partnerships with Shell and Statoil, while BP is working with the Chinese giant Sinopec. In the U.S., Shell, Exxon-Mobil, Chevron, and BP have gravitated toward shale gas, with BP purchasing a 25 percent stake in Chesapeake Energy, once one of the largest drillers in the Marcellus Shale. China's own shale gas reserves are apparently considerable and Sinopec and CNOOC have formed partnerships with U.S. based multinationals as well as BP to drill there.³⁴ According to the Transnational Institute, the drillers include "global corporations such as Apache, Chesapeake, Chevron, Dart, Encana, Exxon Mobil, Schuepbach, Talisman, Shell, etc."³⁵

Will New Free Trade Agreements Fast Track Fracking?

The Trans-Pacific Partnership (TPP) and the Transatlantic Trade and Investment Partnership (TTIP), two new trade agreements currently under negotiation, are expected to expand investor protection clauses that could cause an increase in gas drilling and fracking.

The TPP is a proposed free trade agreement between twelve countries: the U.S., Canada, Mexico, Chile, Peru, Australia, New Zealand, Malaysia, Singapore, Vietnam, Japan, and Brunei.³⁶ The TTIP includes the U.S. and 27 nations of the European Union.

Both agreements are expected to expand a legal framework activate under the North American Free Trade Agreement (NAFTA), called “investor-state equivalency.” This clause allows foreign companies to challenge and potentially overturn vital local, state, and national labor, public health, domestic content, and environmental safeguards that are seen as “trade barriers” and lower profit expectations.³⁷

In 2012, a U.S. owned oil and gas company, Lone Pine Resources, sued Quebec for \$250 million over its fracking moratorium.³⁸ The company claims that Quebec’s fracking ban prevents the company from profiting from oil and gas mining in the St. Lawrence Valley.

Even if a law or regulation demonstrates a clear public purpose, these investor protection claus-

es still give companies the right to be compensated at fair market value.³⁹ This eliminates the risk related to companies investing in projects that threaten community and public wellbeing as taxpayers will be held responsible for compensating the firm. Taxpayers are also saddled with the legal fees governments amass defending regulations and laws from corporations.

Hundreds of sub-national and national bans against fracking have been passed throughout the world in the last few years (see below). Regional or national fracking bans have been passed in the U.S., Bulgaria, France, the U.K., South Africa, Germany, Romania, the Czech Republic, Argentina, Ireland, Australia, and Canada.⁴⁰ These moratoria against fracking would be threatened by the TPP and TTIP.

The TPP also threatens to significantly expand the market for shale liquid natural gas exports from the U.S., driving more fracking and natural gas drilling in the U.S.⁴¹ Japan, one of the countries participating in the TPP, is the largest importer of liquid natural gas (LNG) in the world. It accounts for 33% of the world’s LNG import market, importing 78.8 million tons in 2011.⁴² A 2012 study of LNG exports by the U.S. Department of Energy’s Office of Fossil Energy stated that the U.S. public would not benefit from increasing LNG exports. Instead, the study said that it would only benefit those who rely on investment dividends, as opposed to wages and could negatively impact U.S. consumers by causing the price of natural gas to increase.⁴³

The Anti-Fracking Movement

The global growth in fracking has been met with a high level of resistance. Wherever fracking is happening or has been proposed, it has almost invariably generated opposition. In

some instances the opposition has involved direct actions and civil disobedience; in others, anti-fracking activists have used conventional public oversight procedures to appeal to local

and regional decision makers and, in a growing number of instances, national parliaments. Today the anti-fracking movement is showing signs of cohering into an international movement—one in which unions can still play an important role.

There are several core issues driving anti-fracking activism, each of which are reviewed below. Initially, concerns focused mainly on water consumption and contamination. More recently, a number of research studies have revealed that the emissions impact of fracking is probably much larger than was previously believed, and this is also contributing to growing levels of activism.

Water Contamination and Access

As noted above, the impact of fracking on water is a major issue for the anti-fracking movement. “Produced water” often returns to the surface containing measurable concentrations of radioactive materials and huge concentrations of salt. This puts stress on water treatment facilities that were not designed to process this kind of wastewater. Hence, produced water is often left in large ponds where the water eventually evaporates or seeps into the surrounding land. Sometimes the water is dumped into mainstream waterways.⁴⁴ A recent report calculated that 280 billion gallons of toxic wastewater were produced by U.S. wells in 2012, while 145,000 hectares of U.S. land have been directly damaged as the result of drilling since 2005.⁴⁵

Concerns about water scarcity have also solidified the anti-fracking movements in several countries, such as France (Rhône-Alps) and South Africa (the Karoo region), as well as in the U.S., especially in the Western states that have been enduring serious drought conditions in recent years. In South Africa, 24 exploratory fracking wells are expected to use over 200,000 cubic meters of water in a region where barely any

water is available. This has provoked opposition from farmers and, significantly, farm workers.⁴⁶ South African anti-fracking groups also note that the benefits of fracking will go to the rich and not to the rural poor and urban working class. In China, efforts are underway to exploit almost 230 billion cubic feet of shale gas, requiring an estimated 485 billion cubic feet of water. Little is known about anti-fracking activity in China but much is known concerning water scarcity—China’s per capita water availability is barely 25 percent of the global average.⁴⁷

Mystery Chemicals and Health-Related Concerns

In the U.S., the gas industry has been criticized for failing to disclose the chemicals used in hydraulic fracking. This non-disclosure is also a major driver of resistance in the U.S., and this seems to be the case in a number of other countries.

The chemicals used in fracking have been linked to poor health in people and to the death of farm animals. The actual composition of the fluid used in fracking is kept secret by the industry. However, a study undertaken by the US House of Representatives in 2011 noted that, of 2,500 fracking inputs, 650 are chemicals and several of these are carcinogens and hazardous air pollutants. The quantities used are vast. The study reported that fourteen oil and gas companies injected 780 million gallons of fracking chemicals and other substances into wells, including 10.2 million gallons of fluids containing known or suspected carcinogens and 11.7 million gallons containing chemicals regulated under the Safe Drinking Water Act.⁴⁸

According to a study conducted by New York State’s Department of Environmental Conservation, each well will inject 49,000-159,000 gallons of unknown chemicals into the ground. The impact of the chemicals used in shale gas

drilling, both in the short and long term, remains unknown. The sheer scale of the shale gas boom has heightened concerns with regard to the impact of such a massive use of “mystery chemicals.” In New York State, the gas industry hopes to receive permits for the construction of 42,126 wells in the next 30 years.⁴⁹ As one study notes, “without rigorous scientific studies, the gas drilling boom sweeping the world will remain an uncontrolled health experiment on an enormous scale.”⁵⁰

Displacement of Indigenous People and Destruction of Culture

In the Americas, indigenous people have been an important force in the struggle against fracking, especially in Argentina and Canada, largely due to concerns about displacement and destruction of their culture.

In Argentina, where large deposits of shale gas have been discovered, the state-owned energy company YPF has entered into an agreement with Chevron to drill in several regions of the country. Today Shell, Exxon, Petrobras, Apache, Dow, and Total, among others, are exploring Neuquén’s shale formations. Moreover, YPF intends to explore in Uruguay, Bolivia, Paraguay, and Chile.⁵¹

The indigenous Mapuche people of Neuquén in Patagonia consider fracking to be a threat to their communities and their culture and have thus been at the forefront of the anti-fracking fight. Again water—which carries with it deep religious significance for the Mapuche and other indigenous people in the Americas—is a central focus of the struggle. An environmental impact study conducted in the region by a German consultancy firm found that 630,000 cubic meters of soil had been contaminated with chromium, lead, arsenic, naphthalene, and pyrene, as well as other heavy metals in the water.⁵² The levels of contamination have been se-

rious enough that the Argentinean government has resorted to bringing in water by truck to Mapuche communities. It is important that the struggle of the Mapuche be seen in the context of decades of indigenous people’s resistance to mining and drilling and to the displacements of communities and destruction of indigenous culture.

The Mapuche have initiated a series of militant actions. For example, they seized a gas processing plant near Zapala in late 2011 as a means of expressing anger at the contamination of sacred water supplies.⁵³ In late August 2013, 5,000 protesters in Neuquén clashed with police as the Neuquén parliament was poised to legalize drilling. According to *Observatorio Petrolero Sur* (OPSUR), “In seven hours of protests, more than 25 people were injured with rubber bullets and tear gas; one of them, a 33-year old teacher accompanied by his son, was hit by a lead gunshot in the chest. Several people were detained. In spite of the situation in the streets, that day the parliament approved the agreement.”⁵⁴ Houses of a Mapuche community were burnt as retaliation for the protest. The following day, August 23, 2011, 10,000 mobilized to protest both the repression of the previous day and the YPF-Chevron agreement. Despite the crackdown, anti-fracking resistance has led to fifteen local authorities banning fracking across five provinces in Argentina.

Indigenous people have also been at the center of the three-year old anti-fracking movement in New Brunswick, Canada, where direct action methods have frequently been used and an encampment established.⁵⁵ Both water scarcity and the religious significance of water among First Nations are again central concerns.

In June 2013 a three-day battle ensued between members of Elsipogtog First Nations people and police in New Brunswick, Canada. The former surrounded a parked gas industry vehicle and refused company efforts to reclaim it. A

demonstration of 100 Elsipogtog outside the offices of Southwestern Energy, the company leading the shale gas exploration effort, led to a number of arrests. In December 2013, members of the Mi'kmaq and Maliseet First Nations staged protests against shale gas exploration in New Brunswick.⁵⁶

Fugitive Methane and Climate Concerns

At the point of combustion, natural gas generates up to 50 percent fewer emissions than coal per unit of energy produced. Given this, the majority of mainstream environmental groups in the U.S. have regarded natural gas (including shale gas) as a 'bridge fuel' from coal to renewable energy. However, in the last few years data from a number of studies has drawn attention to the methane escaping from drilling sites (known as "fugitive methane") and there is now considerable evidence to suggest that, from a climate perspective, burning shale gas is no better than burning coal and may in fact be worse. As a result of this new data, the anti-fracking movement is beginning to gain more support among mainstream environmental organizations in the Global North.

Per molecule, the global warming potential of methane is far higher than that of CO₂, 34 times stronger as a heat-trapping gas than CO₂ over a 100-year time scale, and 86 times more powerful over a 20-year time frame according to the Intergovernmental Panel on climate Change (IPCC).⁵⁷ Methane leakage levels of just 1.5%-3% of gas harvested would erase all of the GHG-related benefits of using gas instead of coal.⁵⁸

A number of studies by leading scientists suggest that methane leakage rates from shale gas drilling have been seriously underestimated. The work of Robert W. Howarth at Cornell University and Drew Shindell and Gabrielle Pétron of the National Oceanic and Atmospheric Ad-

ministration, support this conclusion. Howarth's study reported that 75% of wells sampled within one kilometer of gas drilling in the Marcellus shale in Pennsylvania were contaminated with methane.⁵⁹ More recently, a comprehensive atmospheric study released in November 2013 by Scot M. Miller of Harvard University's Department of Earth and Planetary Sciences and his team claimed that, based on methane measurements in the South-Central United States, the oil and gas industries may be emitting nearly five times the methane that had previously been estimated by the Emission Database for Global Atmospheric Research (EDGAR).⁶⁰ These studies have to some extent dispelled the better-than-coal "bridge fuel" status of shale gas and mainstream environmental organizations seem to be adjusting their positions accordingly.

How important is fugitive methane from a climate change perspective? According to Howarth and Shindell, fugitive methane from shale gas drilling will produce between 21% and 52% more emissions over a 20-year time frame than coal for the same amount of energy generated. These scientists have predicted that unless emissions of methane (and black carbon) are reduced immediately, the Earth will warm to 1.5 degrees Celsius by 2030 and to 2.0 degrees Celsius by 2045 to 2050 *whether or not carbon dioxide emissions are reduced*. However, reducing methane (and black carbon) emissions, even if carbon dioxide is not controlled, would significantly slow the rate of global warming and postpone reaching the 1.5 degree Celsius and 2.0 degrees Celsius thresholds by 12 to 15 years.

Currently, many anti-fracking activists are either unaware of the fugitive methane issue or regard it as having limited potential to organize resistance at the local level. However, this could change as more is known about methane's global warming potential and large green organizations and NGOs turn away from the "bridge fuel" perspective.

Anti-Fracking Activism at the Local Level

Hundreds of anti-fracking groups have emerged in more than a dozen countries in recent years. Very few of these groups grew out of the established environmental organizations. France's anti-fracking *Collectif* movement, for example, grew from inside the regions identified for shale gas development and encompassed more than 260 groups nationwide by May 2012.⁶¹ New York State's formidable anti-fracking network evolved from small groups of upstate farmers and residents, although NGOs like Food & Water Watch now play an important role. The groups in New York have also benefited from the activism of groups in Pennsylvania, the main focus of which has been to alert communities in their neighboring state of the many negative impacts of fracking on water supplies, property values, roads and other infrastructure, and the health of residents.⁶² In the UK, anti-fracking activity is presently sustained by a wide range of groups concerned about the despoilment of the countryside and the negative impacts on rural life as well as climate change and larger societal questions.

The anti-fracking movement is also quite diverse both in terms of its goals and the range of issues and sentiments that generate activism. In Bulgaria, the Czech Republic, and France, for example, the opposition to fracking is built around concerns of foreign multinationals taking over local and national resources.⁶³ Chevron recently secured 650,000 hectares of concessions in Romania, bringing to 800,000 hectares the total amount of land under its control, or about 3.5% of the country's surface territory. Protests have focused around the village of Pungesti in the country's North West region. In Poland, nine million hectares, almost a third of the country's entire land area, have been opened up to corporations for exploration and drilling. Resistance to fracking from Poland's rural communities appears to be rising, and Shell

is moving to take advantage of shale gas in the Ukraine, where anti-fracking groups are also being formed.⁶⁴

In Argentina, where indigenous groups have taken the lead, the anti-fracking movement has also gained momentum around issues of energy sovereignty and calls to resist the takeover of Argentina's energy resources by foreign multinationals. Chevron has invested \$1.5 billion in the nationalized company YPF for shale gas development.⁶⁵ In Mexico, the present government is seeking to amend the Mexican Constitution in order to allow foreign companies to develop Mexico's energy resources. And while civil society has focused mostly on fighting the proposed privatization of the state owned oil company PEMEX, the amendment would also open the door for private multinationals to develop fracking in the Northeast and the Gulf of Mexico. Pemex is already exploring for shale gas in the Salinas-Burgos-Picachos basin, an extension of Texas' Eagle Ford shale. The recently launched Mexican Alliance Against Fracking has urged elected representatives "to consider the serious negative and irreversible implications [of fracking] for the Mexican people and the environment."⁶⁶

In a growing number of examples, opposition to multinationals is mixed with concerns about how fracking will affect people's livelihoods and quality of life in the mostly rural areas where hydraulic fracturing occurs, as noted above in the case of the UK. This is evident in many struggles, with Australia and Ireland also providing good examples.⁶⁷ In the UK, the focus of the first high profile, community-led opposition to fracking emerged in a small village of Balcombe, Sussex, during summer 2013. The village, located 30 miles south of London, comprises about 1700 residents of whom 85% were polled as against fracking exploration.⁶⁸ Exploratory drilling by the Caudrilla corporation prompted a strong response from the local community, supported by the mobilization

International Energy Agency Golden Rules

The Golden Rules underline that full transparency, measuring, and monitoring of environmental impacts and engagement with local communities are critical to addressing public concerns. Careful choice of drilling sites can reduce the above-ground impacts and most effectively target the productive areas, while minimizing any risk of earthquakes or of fluids passing between geological strata. Leaks from wells into aquifers can be prevented by high standards of well design, construction and integrity testing. Rigorous assessment and monitoring of water requirements (for shale and tight gas), of the quality of produced water (for coal bed methane), and of waste water for all types of unconventional gas can ensure informed and stringent decisions about water handling and disposal. Production-related emissions of local pollutants and greenhouse-gas emissions can be reduced by investments to eliminate venting and flaring during the well-completion phase.

of anti-fracking activists not just from neighboring towns and villages but converging from all over the country.⁶⁹ Anti-fracking activity has spread to the Manchester region. In Australia, protests in Melbourne against gas drilling mobilized around the slogan “Farmland not Gasland.”⁷⁰

Regulate or Ban? Movement Divisions

The notion that fracking could perhaps be done safely has sometimes opened up a ‘ban’ versus ‘regulate’ divide within the anti-fracking movement.⁷¹ Though generating tensions, it has not stopped the movement’s overall momentum.⁷² Some groups have approached the issue tactically: by shaping emerging regulatory regimes through grassroots activism (especially via public commentary periods), opponents of fracking can insist on regulations that are strict enough to make fracking commercially unviable or technically impossible. In Germany proposed regulations—presently awaiting parliamentary debate—would forbid fracking near water supplies or close to national parks or conservation areas, with each application to drill requiring its own environmental impact study.⁷³ However,

others in the movement are concerned that engaging in the development of regulatory frameworks merely spreads the illusion that fracking can be safe if adequately regulated. They regard this as a gift to the gas industry, and indeed the IEA has presented its Golden Rules guidelines (see below) as an opportunity for the industry to “get its act together,” and thereby achieve a “social license to operate.”⁷⁴

The gas industry initially dismissed those who have raised concerns about fracking as ideologically motivated individuals making claims that are empirically groundless and damaging to job creation and economic growth. However, in 2012 the IEA acknowledged that the environmental concerns about fracking were neither groundless nor trivial, and the Agency proposed a series of “golden rules” for the gas industry in order to establish safe, or safer, practices for shale gas drilling.

The U.S. Experience with Regulation and Regulatory Processes

Voices in the pro-ban wing of the anti-fracking movement have little confidence that the indus-

try will diligently observe the IEA's golden rules, and they note that the capacity of authorities to regulate the industry is often weak, due to the number of wells being constructed and the lack of funds and inspectors—problems faced by regulatory authorities almost everywhere. Regulators often reveal a lack of knowledge of the processes involved in fracking, making effective regulation even more difficult.

In the United States, state-level regulatory agencies have been criticized for their cursory handling of gas industry permit applications. For example, in Pennsylvania, Republican Governor Tom Corbett passed an executive order in mid-2012 aimed at speeding up the permitting process handled by the State's Department of Environmental Protection. Under the order, the timely issuing of permits became a factor in the performance evaluation of Department employees.⁷⁵ In 2011, the Associated Press reported that state environmental regulators spend as little as 35 minutes reviewing each of the thousands of applications for natural gas well permits.⁷⁶ Environmental groups in New York State highlighted a sharp decline in the number of well inspections after 2002, even as the number of wells installed grew dramatically to over 10,000 in 2012. Of the 155,000 wells installed in Pennsylvania and Ohio (a combined number), only around 10% have apparently been inspected.⁷⁷

A leading anti-fracking NGO, Food and Water Watch, argues strongly for a complete ban in the U.S., noting that:

Fracking is exempt from key federal water protections, and federal and state regulators have allowed unchecked expansion of fracking, creating widespread environmental degradation. Overwhelmed state regulators largely oversee the practice. Even if the laws on the books were strengthened, fracking poses too severe a risk to public health and the environment to entrust effective and rigorous regulatory oversight to these officials. Both state and federal regulators have a poor track record of protecting the public from the impacts of fracking.

Congress, state legislators and local governmental bodies need to ban shale gas fracking.

The Case of Illinois

U.S. environmental groups that still consider shale gas to be a “bridge fuel”—such as the Natural Resources Defense Council (NRDC)—have tended to view regulation as a better option than banning fracking altogether because it allows for the preservation of whatever GHG mitigating advantages gas may have over the use of coal. The NRDC calls for a halt to fracking only “until sufficient safeguards are in place.”⁷⁸ However, Greenpeace, World Wildlife Fund (WWF), and Friends of the Earth have all called for a ban on fracking.

In the case of Illinois during Spring 2013, the “regulate or ban” issue resulted in an open split between the likes of the Sierra Club, the NRDC, and the pro-ban groups. Believing a ban to be beyond the capacities of the anti-fracking movement to accomplish in the short-to-medium term, the Sierra Club and NRDC decided to support a bill to regulate fracking in a state where drilling appeared imminent and no effective regulations were in place. In this context, they argued, any set of regulations—however inadequate—has to be viewed as a step forward and thus an opportunity to strengthen regulations over time. The bill, which subsequently passed in the state legislature, was designed to impose safety regulations on the gas industry that, among other things, required all waste—which includes “flowback” of all the chemical-laced water pumped into the ground—be stored in closed tanks, rather than the pits that chronically leak and overflow elsewhere. Restrictions were introduced on venting and flaring of natural gas (which contains the potent greenhouse gas methane, as well as other harmful constituents, and turns to smog), and a ban on the dangerous practice of injecting diesel (which contains carcinogenic hydrocarbons).⁷⁹

The pro-ban, anti-fracking organizations were emphatically opposed to the legislation. In the words of one pro-ban activist:

Regulations cannot prevent well casings from leaking as they age and fail. Or keep methane from migrating through underground faults. Or eliminate the 24/7 noise pollution from drilling. Regulations cannot keep benzene from rising out of boreholes. There is no good storage solution for radioactive wastewater. And the jobs fracking provides are temporary and toxic.⁸⁰

Fracking is now being proposed in California where large shale gas deposits have been discovered. In September 2013, California voted to regulate fracking. The bill was criticized by the NRDC and other environmental groups as being too lax and the growing anti-fracking movement in California has viewed the regulations as a means of reassuring the public that fracking can be safe in the hope that opposition to fracking will dissipate.⁸¹

U.S. Federal Regulation – and Industry Self-Regulation

In October 2012, the Obama Administration offered millions of acres of America's public lands for oil and gas development accompanied by assurances that drilling approved on these territories would be subject to federal regulation.⁸² The U.S. Department of the Interior issued draft regulations addressing hydraulic fracturing on public lands. The proposals, which generated more than 177,000 comments during the public comment period, required companies to disclose fracking chemicals and verify that harmful fluids stay out of groundwater.⁸³ The method of disclosure however, remains controversial. In April 2011, a voluntary chemical disclosure registry was launched for companies developing unconventional oil and gas wells, involving a website, FracFocus, where well operators and service companies report their chemical use to an online registry.⁸⁴ The Obama administration

and eleven states declared this form of disclosure permissible.

An April 2013 report issued by Harvard Law School on the regulation of fracking noted:

Incomplete and inaccurate disclosures serve no public purpose. If a property owner searches for a well form on FracFocus, she may find that the form omits information required by the state, contains nonexistent Chemical Abstract Service (CAS) numbers, or hides the identity of chemicals. Unable to search across forms, the property owner will not know that other forms disclose chemicals withheld in this form or list different ingredients for the same product. If she asks for more information from FracFocus she will be denied on the grounds that the site's organizers are not subject to state or federal public records laws.⁸⁵

Concerns about the chemicals and their immediate and long-term impacts remain high and the confidence of grassroots anti-fracking activists in the industry's capacity for self-regulation appears to be correspondingly low.

The recent studies drawing attention to both the levels and likely severe implications of fugitive methane (discussed above) raise a new set of questions regarding the capacity of the industry to either regulate itself or be regulated at a level that is considered satisfactory. Adequate regulation of methane leakage from fracking could be even more elusive than using regulatory measures to protect water systems from contamination. Additionally, fugitive methane turns what might be dismissed as a local issue affecting water into a global issue affecting the entire planet. Thus the "regulate or ban" question now has global significance.

From Local Struggles to National Moratoriums

Local actions to restrict and stop fracking have produced visible results. In New York State, Governor Andrew Cuomo has yet (June 2014)

to decide whether the present moratorium on new fracking will be lifted or not.⁸⁶ Nevertheless, more than 100 New York communities have initiated bans on fracking. Numerous municipalities in other states across the adjoining Marcellus and Utica shale regions—as well as some in the more conservative Texas—have instituted local bans. Groups throughout the U.S.' Marcellus shale region have implemented local ordinances regulating aspects of drilling activity from truck traffic to noise levels. New York State courts have upheld local bans against industry lawsuits, setting a precedent that may be enshrined in the state's energy policy.⁸⁷

Aside from New York, no other state in the U.S. has a moratorium in place, either temporary or permanent. However, the list of countries where moratoriums have been introduced is growing, even if some have since been rescinded. A number of countries, including Bulgaria, the Czech Republic, France, Germany, Luxembourg, Northern Ireland, the Republic of Ireland, Romania, and South Africa, have imposed moratoriums on fracking. A moratorium is in place in the Czech Republic at least until the middle of 2014.⁸⁸ Regional moratoriums are in place in the province of Quebec, Canada, and in Victoria and New South Wales, Australia.⁸⁹

In France, drilling permits were issued in 2010 without public consultation in three locations, with 64 additional locations pending. This led to a grassroots movement that pressured local authorities to ban fracking, eventually leading to a national moratorium in July 2011.⁹⁰

Local actions also appear to be on the increase in countries where proposed moratoriums have been defeated or have yet to gain sufficient support to influence a national or parliamentary decision. In Poland, districts have banded together using private property rights, consent requirements, and formal petitions to deflect exploratory drilling. In the U.K., the village of Balcombe's Parish Council rejected a drilling

application by the energy company Cuadrilla "without even the briefest discussion."⁹¹

However, achieving a moratorium is no guarantee of a final victory against fracking. The gas industry has applied immense pressure to remove any moratoriums that have been put in place, with South Africa and Romania both buckling under the pressure.⁹² France continues to be pressured to reverse its decision. Interestingly, activist groups in France initially called for a six-month moratorium to study the environmental impact of fracking but later called for a permanent ban. In Bulgaria, activists called for a legal ban to succeed the current moratorium, as have German anti-fracking activists in North Rhine-Westphalia. In Canada, sustained activism resulted in the Quebec regional government's introduction of a partial moratorium to allow for time to study environmental impacts. A bill to ban fracking for an additional five years was submitted to the Quebec national assembly in June 2013.⁹³ In Romania, Prime Minister Victor Ponta's government imposed a moratorium in May 2012 pending the completion of the then ongoing European-level studies on the environmental impact of fracking. The moratorium ended in December 2012 and has not been extended. In January 2013, Prime Minister Ponta announced that shale gas exploration should be considered as something positive. The protests against the government continue as of this publication.

A Global Movement Emerging?

Anti-fracking activism has grown from small local pockets of resistance to a nascent global movement in recent years. Several cross-national initiatives have emerged in the last few years. In 2012, the Treasure Karoo Action Group based in South Africa forged a partnership with U.S. NGO Water Defense.⁹⁴ Similarly, in 2012, the UK's Frack Off group and Bulgaria's Civil Society Against Shale Gas joined forces to mobilize grassroots activists against shale gas leases in

Romania's Dobruja region. The desire to protect the Danube River from contamination has provided the basis for cross-border solidarity and coordination between the anti-fracking movements in Bulgaria and Romania (the Danube runs through both countries). The movements, which are organized around the slogan "Two peoples, one river," have staged coordinated protests in a number of cities on either side of the border. In Bulgaria, the region where Chevron intends to drill is a major wheat producer and considered to be the agricultural heartland of the country. Protesters carry loaves of bread as they march, drawing attention to their concerns about water and soil contamination.⁹⁵

Meanwhile, French and particularly German anti-fracking activists are also active in Poland's anti-fracking movement. International environmental NGOs have also played a key networking role, supporting local anti-fracking groups and drawing attention to the global climate impacts of fracking.

The September 2012 and October 2013 Global Frackdown demonstrations offer yet more evidence that a global movement is emerging to tie the work of local groups together.⁹⁶ Led by Food and Water Watch, Global Frackdown includes affiliated organizations in six continents.

Trade Unions and Fracking

Shale gas exploration and drilling using hydraulic fracturing began just over a decade ago in Texas. It has since spread to seventeen U.S. states, is moving forward in Canada, and is proposed or already occurring in roughly a dozen countries. In 2012 fracking was a \$37 billion industry, according to one estimate.⁹⁷

Union responses to fracking are reviewed below, beginning with the U.S. and Canada. As noted above, 87% of the world's fracking is happening in North America and unions around the world could benefit from learning how unions in these two countries have responded both to fracking and to the opposition movement that has emerged. Global trade union bodies and national centers outside the U.S. and Canada have also begun to respond to fracking—a summary of these responses is also provided as well.

The United States and Canada

In the U.S., union positions on fracking have been largely shaped by those unions affiliated

with the Building and Construction Trades Department (BCTD) of the AFL-CIO.⁹⁸ The BCTD represents two million workers in the U.S. and Canada and has forged a close and increasingly public alliance with the oil and gas industry.⁹⁹ In June 2009, the American Petroleum Institute and fifteen labor unions announced "the historic creation of the Oil and Natural Gas Industry Labor-Management Committee, which will work to promote job retention and growth... by promoting innovative and affordable access to energy that is vital to the American economy." The committee would engage in "a communications effort to educate the public and other stakeholders about the effects of legislation that would restrict exploration or hinder processing, refining and marketing of U.S. oil and natural gas products."¹⁰⁰

The BCTD's alliance with the oil and gas industry has been the source of numerous pro-fracking resolutions adopted by state-level federations of the AFL-CIO. In the public discourse, unions have been mostly in favor of fracking and therefore opposed to any proposed or existing mor-

atoriums. This has been evident in key fracking states such as Illinois, Maryland, Ohio, Pennsylvania, Texas, and West Virginia. In these states, unions have stood alongside the Chambers of Commerce, the National Association of Manufacturers, and the American Petroleum Institute in supporting and promoting fracking.¹⁰¹ Unions and industry have campaigned to promote shale gas drilling in the Marcellus shale, which spans several states, including Pennsylvania and New York.¹⁰²

However, not all U.S. unions support fracking. In New York, the State AFL-CIO has not taken a position, despite the fact that both the International Union of Operating Engineers and the Northeast Council of Carpenters have joined the pro-industry Clean Growth Now coalition.¹⁰³ In September 2012, the New York City-based District Council 37, AFSCME (representing 140,000 public sector workers) called for a ban on fracking, citing concerns around toxic exposure for members of a union local (branch) representing public water and sanitation workers.¹⁰⁴ The NY State Nurses Association has also been a visible part of the anti-fracking movement. In California, AFSCME's District Council 57¹⁰⁵ and the California Nurses Association, together representing over 100,000 workers, are both opposed to fracking.¹⁰⁶ In Pennsylvania, union opposition is weak with perhaps only the Communication Workers of America Local 1104 (10,000 members) opposed to fracking and supportive of a state-wide ban.¹⁰⁷ In Texas, union support, while visible, has been lukewarm because the quality of the jobs created by the shale gas industry is often poor.¹⁰⁸

Overall, union opposition to fracking has been slow to surface, whereas unions that support fracking have been well organized and visible. There are several reasons for this disparity. The pro-fracking unions in the BCTD are in a transactional arrangement with the oil and gas industry whereby the unions' political advocacy is expected by the industry in return for the indus-

try agreeing to enter into Project Labor Agreements (PLA) to hire union workers. The unions opposed to fracking are almost invariably in a completely different situation. Their employers are normally not affected; they often have no jobs to gain or lose; and the decision to oppose fracking must be made for a different set of reasons—such as concerns about public health, climate change, solidarity with those struggling against the industry, and so on. Many unions would prefer not to publicly oppose something that another union or group of unions support, which also dampens opposition. Furthermore, fracking is not happening everywhere in the U.S., so unions in states not affected by fracking are far less likely to take a position. As a result, most of the large U.S. unions not in the BCTD remain effectively neutral. The main national coalition—Americans Against Fracking—lists only one union in its long list of allies, namely National Nurses United.¹⁰⁹

Unions in the U.S. have expressed concerns with regard to the health and safety of workers involved in shale gas drilling. The AFL-CIO, the United Steelworkers, and the United Mine Workers have lobbied regulatory authorities with regard to the risks facing workers exposed to crystalline silica, which is used in fracking. A study by the National Institute for Occupational Safety and Health (NIOSH) reported high levels of worker exposure to this substance, which is known to cause cancer as well as silicosis.¹¹⁰ It also noted the high levels of fracking industry fatalities as a result of motor vehicle crashes, explosions, and accidents involving other machinery, resulting in a call for tougher standards by unions. Many pro-fracking unions seldom, if ever, acknowledge the public health concerns raised by groups that oppose fracking due to its use of toxic chemicals and the risk of water contamination, spills, and explosions from fracking.¹¹¹

The Canadian trade unions' approach to fracking often contrasts quite sharply with the pro-frack-

ing unions in the U.S. Not only do major unions like CUPE and UNIFOR oppose fracking, they cite its negative impact on the climate and express solidarity with indigenous organizations that are fighting against shale gas drilling and tar sands expansion.¹¹² Referencing “frightening pollution,” UNIFOR’s November 2013 Executive Board statement is also among the first to acknowledge “large emissions of methane” through leakage.¹¹³ CUPE’s statement extended solidarity to “community grassroots groups, as well as all other First Nation Communities as they protect Mother Earth for the benefit of all Canadians.”¹¹⁴ UNIFOR and CUPE’s perspective on fracking is grounded in a social movement approach that prioritizes solidarity with other movements and in a pragmatic approach to Canadian energy policy that calls for the use of natural resources in ways that are responsible and beneficial for the Canadian economy as a whole.

Does Fracking Create Jobs?

Unions in the U.S. often take the jobs claims made by the gas industry and pro-business groups at face value. For example, the U.S. Chamber of Commerce claimed that shale gas production “created over 300,000 new jobs in the last two years” (2010-2012).¹¹⁵ The U.S. Chamber of Commerce’s Institute for 21st Century Energy claimed that 238,000 jobs were created in shale-related industries.¹¹⁶ After some questioning on the part of anti-fracking groups, the Chamber then issued a revised press release that changed the 238,000 jobs “created” to 180,000 jobs “supported” by natural gas. The U.S. Chamber did not explain the basis for (or the source of) this revised claim.¹¹⁷

The Chamber’s numbers contrast sharply with the U.S. Department of Labor’s job numbers. The Department states that between the fourth quarter of 2008 and the fourth quarter of 2011, the industry created a total of 18,007 jobs in

“core” Marcellus industries, with an additional 5,611 jobs added in “ancillary” industries.¹¹⁸

In a December 2013 report, *Exaggerating the Employment Impacts of Shale Drilling* the Multi-State Shale Research Collaborative examined employment in the Marcellus and Utica Shale in six states: Maryland, New York, Ohio, Pennsylvania, Virginia, and West Virginia.¹¹⁹ The study found that, region-wide, shale-related employment accounts for nearly 33,000 jobs, one out of every 794 jobs in the six states. The education and health sectors by contrast, account for 4.5 million jobs in the region, one out of every six jobs. Other findings include:

- ⇒ In the region as a whole 8,750 wells were drilled.
- ⇒ An estimated 3.7 jobs were created for every well drilled in the region during the period 2005-2012. This figure stands in sharp contrast to the claims in industry-funded studies, which included estimates as high as 31 jobs created per well drilled.¹²⁰
- ⇒ Shale-related employment across the six-state Marcellus/Utica region fell over the past twelve months from the first quarter of 2012 to the first quarter of 2013.

The report acknowledges that employment impacts of the shale gas industry go beyond the extraction and support activity jobs. Fracking creates jobs for suppliers to the industry, such as trucking companies that carry water to well pads, drilling equipment manufacturers, and real estate companies that help gas companies acquire drilling leases on land rich in shale gas. Beyond suppliers, jobs are also created when workers, business owners, and landowners spend the wages, profits, or royalties earned from the shale industry or its suppliers.

However, the report claims that the numbers of “indirect” and “induced” jobs claimed by pro-industry studies and the Chamber of Commerce

is more than double those that would have been calculated based on standard research methods.

The study concludes that the gas industry and its supporters have exaggerated the job benefits of horizontal drilling in the Marcellus and Utica Shale. While the industry has created jobs, particularly in Pennsylvania and West Virginia, the shale-related jobs numbers are far below industry claims. "Shale development is simply not a significant driver of job growth or the overall economies of the six states with major deposits."¹²¹

The study also identified a drop in the number of wells drilled in 2012 and a drop in the number of jobs consistent with a classic "boom and bust" pattern for extractive industries.

Global Trade Union Bodies

As noted above, many unions outside of North America are only just becoming aware of fracking. The International Trade Union Confederation (ITUC) and the principal Global Union Federation (GUF) representing members in the energy sector, IndustriALL, have yet to develop a fully formed position. However, the ITUC, IndustriALL, and other GUFs have strong positions on climate protection and sustainability in general. These standpoints provide a platform for a more robust engagement on fracking in the future.

Public Services International (PSI) recently addressed the issue of fracking as European Public Sector Unions, a regional body of PSI, adopted a resolution on fracking that "rejects the exploitation of shale gas (and oil) given the impact on the environment such as ground water."¹²² PSI brought the issue to the World Social Forum in Tunisia in March 2013 and PSI's Tunisian affiliate is also leading a campaign against fracking.¹²³

National Trade Union Centers

A review of national trade union centers' positions on fracking, based on the countries where fracking is either happening or proposed, suggests that most national centers have yet to weigh in on this important issue.

There are however, a few exceptions. At its 2012 conference, the Trades Union Congress (UK) adopted a motion stating "the fracking method of gas extraction should be condemned unless proven harmless for people and the environment. This type of energy production is not sustainable as it relies on a limited resource. There is evidence that it causes earthquakes and water pollution and further investigation should be carried out before any expansion."¹²⁴ However, the French General Confederation of Workers (CGT) supported industry efforts to lift a moratorium on fracking introduced by France's Socialist government, having expressed concerns about France's energy security and the need for jobs. The CGT cited the need for more research on fracking, stating that it would not support using a technology that could result in environmental and social damage.¹²⁵

In Argentina, the energy unions affiliated with the Argentinian Republic's Federation of Energy Workers (FeTERA) and the Central de Trabajadores de la Argentina (CTA) openly oppose fracking.¹²⁶ Consistent with the kind of social movement unionism for which the CTA and FeTERA are both known, these unions have joined forces with the indigenous Mapuche who are fighting fracking and other drilling and mining projects in the Neuquén province. The Ceramics Workers' union based in Neuquén, representing workers in the cooperatives established after the 2001 economic crisis in Argentina, has also sided openly with the Mapuche.¹²⁷

Trade union centers in Australia and South Africa have yet to adopt a definitive position on fracking. The Congress of South African Trade

Unions' (COSATU) recent statement on the environment notes that COSATU must still resolve their position on some issues, one of which is fracking: "This is a method to harvest natural shale gas trapped in the earth, by hydraulically fracturing the earth at deep levels. The debates are: the process destroys

the land where fracking is done and there is a lot of evidence to suggest that this process is very damaging to underground water systems. It is banned or heavily restricted in at least 155 instances globally [...] will shale gas help South Africa's energy security and job creation?"¹²⁸

Conclusion

The present situation regarding fracking points to a scenario where the global gas industry will continue to promote the advantages of shale gas in terms of jobs, energy security, and climate protection (arguing that shale gas is a "bridge fuel" to renewables because it has lower emissions than coal at the point of combustion). As the push towards more exploration and commercial-scale drilling continues, the movement against fracking will also increase.

It seems inevitable that unions in a growing number of countries will be pulled into the struggles around fracking. And it seems increasingly likely that the anti-fracking movement will grow, making it difficult for unions to stay neutral. Unions could perhaps be more supportive of anti-fracking groups and even take leadership in instances where fracking has been proposed but a movement has not yet been organized.

Unions also have to grapple with the "regulate or ban" question. Can fracking be made safe through regulation? Unions must consider all reliable evidence when attempting to answer this question. Non-industry studies raise serious doubts that fracking could ever be given the "all clear" in terms of overall safety. Again, the U.S. provides a reference point on this issue—although geological formations vary from country to country, with risks fluctuating according to those variations.

Even if all of the water contamination and scarcity issues, along with concerns about chemicals and silica, were satisfactorily addressed, the question of "fugitive methane" from wells could be decisive in terms of the regulate versus ban debate.

In July 2011, the U.S. EPA announced it would urge the industry to reduce at least some of its methane emissions.¹²⁹ Scientific studies suggest that methane leakage could be reduced by as much as one-third (considering the entire life cycle, from well to final delivery of gas). With the new EPA regulations fully in place and enforced, the natural gas industry will remain the largest single source of methane pollution in the U.S., responsible for almost 40 percent of total human-controlled methane emissions.¹³⁰ Unions around the world should be aware of the importance of fugitive methane and examine the capacity of any proposed regulations to adequately resolve the problem.

Meanwhile, the UN has stressed the urgent need to reduce methane emissions globally, beginning immediately—in fossil fuel production, transport, waste management, and agriculture. In the case of shale gas, this would require extended recovery and utilization, rather than venting, of associated gas and improved control of unintended fugitive emissions from the production of gas.¹³¹

Many of the concerns that gave birth to the anti-fracking movement appear to merit broad trade union support. Unfortunately, today's unions face capacity constraints and many competing priorities.

A collective deliberation might help resolve the challenge of capacity constraints. A global con-

ference sponsored by one or more global trade union bodies could work towards a common approach, with the "precautionary principle" as a point of departure. Indeed, the precautionary principle is presently central to most, if not all, union resolutions against fracking. Unions presently in favor of fracking might well wish to reconsider their support on the basis of this principle.

Appendix: Model Resolution – for Discussion

A draft model resolution is offered for discussion, calling for a global moratorium on fracking, as follows:

WHEREAS, the practice of hydraulic fracturing (fracking) for shale gas is today a growing global industry dominated by energy multinationals; and

WHEREAS, the process of fracking has led to serious levels of water contamination due to the toxic chemicals used in the fracturing process; and

WHEREAS, areas with scarce supplies of fresh water needed for drinking and agriculture are being deprived of this precious natural resource as a result of water-intensive shale gas development; and

WHEREAS, fracking is dangerous to the health of workers in the industry, due to the worker exposure to crystalline silica and (in some cases) radon, the high occurrence of vehicle accidents, falls, and tool-related injuries; and

WHEREAS, fracking has been proven to generate high levels of "fugitive" methane, a powerful greenhouse gas and therefore a major contributor to global warming; and

WHEREAS, full life cycle assessments of shale gas report it as more harmful than coal in terms of global warming per unit of energy generated, meaning that shale gas is not a better option than coal from a climate protection perspective; and

WHEREAS, proposed regulations to make fracking safe are presently either not in place, not enforced or not effectively addressing the problems created by fracking in a satisfactory way; and

WHEREAS, shale gas is undermining the prospects of renewable energy, which creates more jobs and is better for the environment and public health; and

WHEREAS, fracking has inspired a global movement of grassroots organizations determined to protect their land, their water, and their air from damage generated by fracking;

BE IT RESOLVED that the (NAME OF UNION) supports an indefinite global moratorium on fracking, in accordance with the precautionary principle;

BE IT FURTHER RESOLVED, that the union will pursue opportunities to work alongside orga-

nizations opposed to fracking and encourage union members to participate when and where they can;

BE IT FINALLY RESOLVED that the union will continue to fight the expansion of extreme fos-

sil-based energy while at the same time advocating for a new renewables-based, low carbon energy system operated under the democratic control and direction of communities and municipalities committed to full workers' rights and protections.

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