

FRACKING?

No, thanks! It's too risky



Photo: EcoFlight

Ewa Sufin-Jacquemart

Shale gas extraction is an excellent illustration of the disease of our time, which is the hegemony of supply-side economics and the imperative of constant economic growth - we consume ever more and at ever faster rates, using more resources and creating ever more waste and pollu-

tion. For the extraction of shale gas requires growing numbers of drills to exploit profitably the whole deposit.

In a competitive free market economy, where there's no long-term management of a valuable resource and where everything that is produced is marketed immediately, a rapid increase in the supply of gas leads to a decline of its price. The production of gas from each drill is high in the first

year or two, and then rapidly decreases and remains at a low level for the rest of the process. Therefore, to maintain a high level of production and income, the new drills have to be made at an increasing rate which grows as the market prices of gas go down. The more drills there are, the more gas ends up in the market and therefore the lower the price, which in turn leads to more drills.

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Letter from Non-Governmental Organizations to Ewa Kopacz, the Prime Minister of Poland

The Special Hydrocarbons Act: An unprecedented threat to democracy, the environment and local communities

Honourable Prime Minister,

The draft special law on the preparation and implementation of investments into prospecting, exploration, extraction and transport of hydrocarbons (the so-called "Special Hydrocarbons Act"), which has been presented by the Minister of the State Treasury, will give special entitlements to extraction companies, exempting their activities related to the exploration and extraction of hydrocarbons (including unconventional forms such as shale gas and shale oil) from a huge part of the Polish regulations. The interests of extraction companies will trump the interests of the environment and society.

According to the documents that support this piece of legislation, its direct beneficiaries include ca. 50 entities that hold licences for the search of hydrocarbons. At the same time, the Ministry of the State Treasury has admitted that the group of people who will suffer as a result of this new law ('the owners of the land and the inhabitants of the areas affected by the investments') is 'difficult to assess'.

This special law will grant full power to the government and its regional governors (voivods), at the same time stripping citizens, local governments and even other public authorities of their voice and power. This law violates the rights of landow-

ners and the rules of environmental conservation, is an assault on public forests and gives investors the right to use public surface water for free.

If this project becomes law, it will be possible to drill for hydrocarbons almost everywhere. The procedures will be simplified; therefore environmental impact assessments will de facto cease to be a part of them. Public consultations will disappear, and environmental organizations will lose the ability to participate in the administrative process. The Minister of Health will lose the right to stop exploitation near health resorts, the directors of national parks - on their territories. The same goes for public forests and sites of important histo-

rical heritage. The decision taken by one person - the voivod - will clash with the rules of democracy and will also create space for corruption, conflicts of interests and abuse of power.

If the law is adopted in its current form, this will be a stark violation of basic civil rights and the rules of democracy, enshrined in the Polish constitution, the EU legislation and international law, including the Aarhus Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters.

We would also like to emphasize that the proposed piece of legislation makes no distinction

between unconventional hydrocarbons, extracted using the controversial fracking technology, and conventional ones. It comes at a time when hundreds of scientific papers have demonstrated the dangers that the extraction of unconventional hydrocarbons creates for the environment, water, the climate and public health. New York State, after investigating these works, decided to replace its moratorium on fracking with a permanent ban.

Taking all of these issues under consideration we call on you as the Prime Minister to rethink this law and stop these harmful, extremely dangerous and undemocratic proposals.

The letter comes with a detailed justification of the arguments put forward in it. It already has been signed by several NGOs. We would like new NGOs, social and ecological initiatives, local governments and political parties to add themselves to the list of signatures. It can be done by sending an e-mail to fundacja@strefazieleni.org

The threat at my doorstep



Barbara Jarmoska

There is a threat at my doorstep that causes me to fluctuate between cowering in fear, basking in denial and screaming in outrage. I don't know how to do battle with so formidable an enemy. What great irony, as for 32 years, I enjoyed a career as a messenger of good health and well-being. (www.road-2-health.com)

These days, I am spending hours planning how I might gather my family, pull up stakes and find a new homeland. We are no longer safe here. The gas industry has arrived and staked its claim to thousands of acres of Penns Woods. The DEP has permitted multiple gas wells on the Loyalsock State Forest that surrounds my property. The Susquehanna River Basin Commission (SRBC) grants consumptive use permits to withdraw millions of gallons of water from the watershed that includes the creek that runs past my front yard.

For decades, the only access road to this remote, beautiful and wildlife-rich area was Butternut Grove - a narrow, „no outlet” road that goes past my driveway and used to dead end at a hiking trail in the Loyalsock State Forest. Most days, not a single car drove by during my 2-mile walk along this road. The

dog trotted off-leash beside me, and neighbors who did drive by would slow down and wave, or stop to chat as country folks are apt to do. The Loyalsock Creek is just over the bank - a stone's throw from the road. I could ride my horse up the mountain, to the place where the one-lane road became Dad-Dad Chapman trail on state forestland. That trail is now gone, gated off, and posted with trespass warnings. Chainsaws and gravel-carrying dump trucks have changed the narrow trail into a wide gravel road through the forest and onto two well pads built nearly side-by-side. Many trees were sacrificed to build that road, the once loved trail on land that is called “common wealth” is now gated and posted and no longer welcoming to hunters, hikers, mountain bikers, cross country skiers, and trail riders. My daily walks and frequent horseback rides, as well as other simple acts of country, creek side life have come to an end.

The lives of all Butternut Grove residents have forever changed at the hands of the corporation claiming the right to send its trucks up the road, to foul the air with diesel fumes, to generate noise, to disturb the ecosystem on the mountain, to haul truckloads of toxic fracking chemicals up and millions of gallons of toxic “produced” water back down. We no longer feel safe enjoying the Loyalsock - a beautiful creek that begins in Sullivan County and travels 64



Photo: Wendy Lynne Lee

miles on its way to the West Branch of the Susquehanna River. For years, this Exceptional Value stream has provided recreation for hundreds of fishermen, kayakers, inner-tubers, swimmers and summer-cabin dwellers - offering water that dances and glimmers and supports abundant fish, amphibian, bird and wildlife - water they now mix with toxic chemicals and force at great pressure into the Marcellus shale.

My grandfather bought these 20 acres with their mile-long creek frontage in 1933. The memories my family has made here are priceless and my grandchildren would have been the 5th generation to run in the meadow, swim in the creek, ride and hike in the nearby woods. In our increasingly transient so-

ciety, roots this deep are precious and rare. And yet - my son and his family recently moved 300 miles away, north of Brattleboro Vermont, far from family, but off the shale, seeking a safer place to raise children. Those of us who remain talk of also abandoning our heritage and leaving the area.

The industry has been carefully mapping out its strategy for years, repealing state and federal laws that would have protected us. The gas rush is here, and the special place we once called home has become the Marcellus Sacrifice Zone.

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Barbara Jarmoska is an activist of Responsible Drilling Alliance, citizens' organization in Pennsylvania.



FracTracker: A Resource for Good



Brook Lenker

FracTracker was launched in June 2010 as a project of the University of Pittsburgh's Center for Healthy Environments and Communities. The initial geographic focus of the project was Pennsylvania and the northeastern US due to growing natural gas extraction in the Marcellus Shale. In 2012, new structural options were considered for FracTracker and that summer, a new independent 501(c)3 non-profit organization was formed - the FracTracker Alliance.

Every day the FracTracker Alliance shares maps, data, and analyses to enlighten America and the world about the impacts of unconventional energy extraction. The organization is based in Pennsylvania but has staff present in NY, OH, WV, and CA. Their website covers oil and gas activity in over 30 U.S. states, national data trends and issues as well as international considerations. The website encounters over 450,000 page views and nearly 150,000 unique visitors annually.

Their work pays dividends: a website visitor discovers drilling nearby; a legislator learns about the industry's rate of water consumption; data are synthesized for an organization making policy recommendations; students discover the true footprint of fracking. Day by

day, they help inform a more positive energy future.

Their work - and the work of many other organizations - has documented widespread impacts from the oil and gas industry wherever it operates. In Pennsylvania, hundreds of cases of well water being compromised from methane migration or other contaminants. Across the U.S., several studies have shown health problems associated with exposure to air pollutants at drilling sites. Well pad construction, pipeline installation, and sand mining (for frac sand) have resulted in the destruction of thousands of acres of forest and wildlife habitat. Communities suffer from heavy truck traffic and the associated problems: increased accidents, road damage, and diesel emissions.

While promoted as a bridge or transition fuel, the climate risks from natural gas development are perhaps the ultimate impact. Methane escaping into the atmosphere is a potent greenhouse gas and the immense volume of oil, natural gas, and other hydrocarbons cumulatively produced from the fracking boom may perpetuate global dependence on these fuels and reduce investments in renewable energy. The supposed bridge may lead nowhere.

FracTracker has been documenting the grassroots energy that is questioning the rush to drill. In New York, they have mapped 86 local movements against drill-

ing, 96 moratoriums that have passed, but not yet gone to full bans, and 85 bans in place. Those maps were referenced by New York's DEC Commissioner at a recent press conference where New York Governor Andrew Cuomo announced a statewide ban on high-volume hydraulic fracturing. But even in New York, victory may only be temporary. Activists there are addressing large pipeline proposals and even a plan to store compressed natural gas in abandoned salt caverns beneath one of the famed Finger Lakes. Until the planet gets a respite from warming, communities liberated from threats to air and water, and nature conserved more than marred, FracTracker - and its many partners - have endless work to do.

The FracTracker Alliance is thinking boldly: exploring new topics, investigating local concerns, building more partnerships, encouraging citizen science (in part, through a mobile app), invigorating social media and communication tools, and reaching out to audiences near and far. In fact, they'll be taking their findings on the road in 2015 - with workshops planned in Florida, North Carolina, Argentina, United Kingdom, Belgium, Hungary, and Poland (yes, Poland!). Details of the Polish workshops are currently being planned. In the meantime, FracTracker encourages Polish audiences to visit their maps and other resources and share questions, photos, and data - anything that will contribute to a better understanding of these important issues and help FracTracker be a continuing resource for good.

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Brook Lenker is the Executive Director of the FracTracker Alliance and previously served as the Manager of Education and Outreach for the Pennsylvania Department of Conservation and Natural Resources and as the Watershed Stewardship Director for the Alliance for the Chesapeake Bay. He holds MA and BS degrees in geography from Towson University.



Photo Credit: Sara Gillooly, 2013

From Pennsylvania to Żurawlow – People and Shale



Barbara Siegieńczuk and Ewa Sufin-Jacquemart share stories from their trip to Pennsylvania.

Żurawłów – a small village in the Zamojszczyzna region – is known for its 400-day-long, successful protest of local farmers against plans of the American company Chevron, related to shale gas extraction. It was the longest anti-fracking protest in the world, ever. One of its active participants, Barbara Siegieńczuk, was invited by the Warsaw and Washington offices of the Heinrich Böll Foundation to the US, where the shale gas Eldorado transformed the economy, but the costs of this boom are getting more and more controversial. Ewa Sufin-Jacquemart, a green activist, accompanied her on the journey.

Ewa Sufin-Jacquemart: We have just returned from the study trip to the US, where we got lots of information about the shale gas boom, especially visible in the places we have been to: in Pennsylvania, where the extraction of the Marcellus Shale has been taking place for almost 10 years, and in the New York state, where local inhabitants are successfully opposing the invasion of the fracking industry. What surprised you the most during this trip?

Barbara Siegieńczuk: I was amazed to see some of the infrastructure so close to houses. It is possible in Pennsylvania. If the ground close to someone's house has been leased by the neighbours, the owners of such a house have nothing to say. The companies can be very persuasive and even manipulate people to achieve their goals, which leads to huge conflicts between the neighbours. Communities, and even families, got divided this way. I did not know that such practices happen in a democratic country. As one of the inhabitants of Dryden, NY said to us: „Democracy in the US was killed in the last six years”. Dryden is the first community in the US where a court's decision, confirming the right of the local authorities to forbid bore-holing for fracking on its area, has been validated. It is a huge, unprecedented victory for the local community, which could overcome internal divisions and put pressure on the local authorities.

E. S.-J.: And how did you like the so-called 'pads' – squares with bore-holes in the woods near Williamsport, which were shown to us by the organisers?

B. S.: It was a depressing site to see. Millions of trees were cut down in the beautiful state woods, that were once full of animals and birds, roads were built with gas and water pipelines dug along them. Pipes and hatches come out of the ground, surrounded by coloured hurdles. Erosion of the ground is supposed to be stopped by some rolls made of waterproof fabrics. Every few kilometers you can see an entrance to the huge production pads or spaces for gas compression or water storage. On the information signs of each pad you can read i.e. about how much water the service company is allowed to use for bore-holes – the allowances ranged from 1.8 to 3.5 million gallons per day (1 gallon = ca. 3.7 litres). Security documents were in an open chest which contained maps and technical details of the chemicals available on the pad. I was surprised that these structures were neither fenced nor guarded. Anyone can enter. That can end in a catastrophe. In Poland we see a problem from the other side of the spectrum. Chevron did not have a licence to drill in Żurawłów – just for seismic research – when it wanted to erect a fence. That is when our protest started.

E. S.-J.: I was also shocked by the sight of the large scale devastation of nature – even in places full of protected species, such as bears or rare birds that need peace and quiet. Let us not forget that people live there, too – in the lower parts of these wood-covered hills. You even found a woman that has the same name as you over there – don't you think you have a lot in common?

B. S.: Yes, meeting Barbara was incredible. Barbara, just like myself, decided to move from the city to the countryside. She loves nature, peace and quiet. She lives in a beautiful place – a small settlement of eight houses, that are situated in the forest, close to the creek. She showed us photos and told the story from four years ago, when, for half a year, huge tank trucks drove down their small road to the shale gas extraction sites situated in the wood-covered hills above their homes. It was

possible because one of the neighbours allowed for the widening of the curve of the road, which consumed part of her house – just for 1,000 dollars. Thanks to her greed and lack of knowledge, all of them suffered from noise and dust day and night for six months.

The arrogance and impudence of the company was the same as anywhere else. On Barbara's land, close to the windows of her house, the company decided to put a portable toilet for a woman that was directing the trucks all day. Millions of trees cut on the hills, along with wide clearings gas and water pipelines that look like ski slopes created conditions for landslides. In 2011 they had a huge flood that completely devastated Barbara's house and paddocks. All of this made her active in a local citizens' organisation fighting against the expansion of the shale gas industry in Pennsylvania.

E. S.-J.: Barbara told us about their work, we were also present at one of the meetings of their board. We have seen how competent and active people are participating in the organisation. Have you seen any similarities between them and your 'Zielony Żurawłów' association?

B. S.: The difference is that Responsible Drilling Alliance groups people from different backgrounds and living in different places, so their work is not focused on any particular place. But there are a lot of similarities. Both them and us fight for the right of local communities to be heard, we lobby for better legislation. We also have the same methods – we gather and share knowledge, participate in legal proceedings, local meetings, conferences, seminars and public hearings.

Our main medium is the Internet. We also went to the meetings of the Agriculture Committee of the Polish Parliament and to the European Parliament. Right now we are also learning how to use renewable sources of energy and will be promoting them and their development. We talked about it with activists from Dryden. I have heard that renewables are developing fast in the United States – especially solar energy. It is the citizens who fight for their development, as the huge energy companies still cling on to the profits from fossil fuels – just as in Poland.

Have you noticed another similar problem as in Poland – that the main investor is using various sub-contractors and the responsibility therefore becomes blurred?

E. S.-J.: It was by accident that we had a chat with an owner of a small company that does drilling for the extraction companies. The drilling place that we visited was situated in the heart of a beautiful state forest. His company drills for the state-owned PGE – Pennsylvania General Energy. The ready-for-use cement is supplied to them by Halliburton – a company that also drills on its own. PGE later uses this shale gas deposit. I do not know who will be responsible if issues such as water and soil poisoning or methane leakage will arise in a few years time. There is a possibility that one company will blame the other and no one will be called to account. That was the case with the extraction of coal in regions of Pennsylvania. Even today state and local authorities have not cleaned up the mess that the extraction companies made.

B. S.: The meeting with Prof. Anthony Ingraffea at Cornell University (Ithaca, NY) was really impressive for me. What do you think about it?

E. S.-J.: That was a very important meeting for me, too. He knows shale gas extraction technologies very well, because he participated in its development, and has been researching their consequences for years. He has broad knowledge, but also thinks about the future of the planet and the human race, the faith of the future generations and not just about present-day economic growth. He told us three important things:

First, we have to watch out, because people, when discussing the consequences of fracking, think about the whole process of shale gas extraction and distribution – consequences of thousands of bore-holes and building of the whole infrastructure needed for the transport of the gas. The extractive industry denies the charges, limiting itself to talking just about the fracking operation. The same is in Poland, so that is important advice.

Second – the argument that under good regulations the industry can have low harm for people and

the environment is invalid. Practice proves that there are no such regulations and no ways of putting them to practice that can guarantee ecological safety and social profits even in the short term – not to mention the long one.

Finally – the most important part of the professor's speech in my opinion – the technology currently used is highly inefficient, as it allows to extract just 5 to 10% of the gas or oil hidden in the shale. Once exploited, a deposit cannot be reused. Unconventional hydrocarbons are the last generation of fossil fuels known to humankind. Burning them for heating or electric energy generation is irresponsible, as it accelerates climate change that is a threat to life on Earth – and we can use energy from wind or the Sun. Fossil fuels should be treated as a resources of the highest importance and used just to produce necessary materials and substances that we can not produce without them, such as medicines, fertilizers or some important composites. The resources poured into extracting oil and gas from shale should be redirected for research and development of methods of saving energy and renewables.

And what about shale gas in Poland? Maybe there is some hope for us if American companies, that are recording losses thanks to low costs of gas on their market, are already thinking about liquefying it and exporting it to Europe where it is more expensive?

B. S.: Until the trip to the US I had such hope myself. But I met the local inhabitants that shared their suffering with me: an agricultural, tourist region with lively nature near Williamsport has been transformed into a mining, industrial region with lots of noise, pollution, workers living in barracks, growing problems with prostitution, drugs, hard and dangerous work related to drilling, conflicts in the local community, devastated democracy, arrogant companies, corrupting the local authorities. Building our energy security on such pillars is unethical. Well, what sort of security is it – we change dependence on Russia for dependence on the US. It seems rational today, but we may regret it tomorrow. We can have a true independence – also a local one – if we learn to save energy and use what we have close to us to produce energy. Sun, wind, thermal heat from the ground or biomass in the countryside, which is produced by the farmers with so much effort, that they have to sell cheaply today.

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Barbara Siegieńczuk – chair of the Zielony Żurawłów association. Since 2012 she has been actively involved against the plans for shale gas search and extraction in the Grabowiec commune, pursued by Chevron. In 2013 the inhabitants created the Zielony Żurawłów (Green Żurawłów) association to protect water, soil and nature of the region against the expansion of the fossil fuel corporations using fracking technology for shale gas extraction.

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Ewa Sufin-Jacquemart – Director of Fundacja Strefa Zieleni (Green Zone Foundation) and an activist of the Green Party. Actively engaged in issues related to energy and climate policies, especially regarding shale gas and activities aimed at energy transition in Poland.

This text in an abridged version of the interview published in the „Dzikie Życie” (‘Wild Life’) magazine 12-1/2014-2015. We thank the editorial board of the magazine for allowing us to reprint this material. Photo: Andrzej Bąk

A Country Bleeding with Gas



Paulina Lota

A visit, in which we could participate thanks to the Heinrich Boell Foundation, started in Washington.

Ana Unruh Cohen – director for energy and climate in the office of senator Ed Markey, introduced us to the legal and political background of the shale gas issue. There is a complete lack of debate related to ecological threads (such as water pollution) in Congress. Due to resistance to fracking from the local communities and the lobbying of the extractive industry, the situation is very tense. There are no coherent policies, just a few recommendations. Initially there was little that the federal government could do in terms of regulation, because most exploration was done on private land.

Each state of the US has its own regulations regarding fracking – ie. in Wyoming there is an obligation to inform about the ingredients of the liquid used for fracking, while there is no such rule in Texas.

The extractive industry is powerful.

The companies argue that there are no risks to the environment, but in many places there have been cases of water and soil contamination and a lack of drinking water for local communities. Problems with depressing ground, earthquakes and the large amounts of post-extraction waste and their utilisation also arose.

But it is the economic factor that prevails – the cost of gas in the US is really low now. There is also the issue of exporting liquefied natural gas to Europe or China – the first LNG export terminal on the East Coast will be ready in 2017. Sen. Markey is fighting in Congress to limit U.S. oil and gas exports abroad, as the costs of export will be passed over to the local communities – these costs of cheaper gas for Europe include polluted water, contaminated air and health hazards. The companies extracting shale gas are strongly lobbying for these changes.

All hope that other countries will learn from the experience of the United States – it is drinking water that is our top priority.

Kate De Angelis, a climate and energy activist from Friends of the Earth, argued that Sen. Markey fights with LNG exports for economic, not environmental reasons – he would like to keep the cheap gas for the US. Her organisation focuses on the negative effect of shale gas extraction on climate change, which she says sadly has no broader appeal in the public. The methane emissions during the extraction and liquification are huge, as the report of Robert Howard from the Cornell University states. Shale gas is cheaper than other sources of energy,

but external costs are not added to the equation – costs such as cleaning of the water, getting rid of pollution, healing people etc.

The director of the Energy Security Initiative of The Brookings Institution (one of the most influential think-tanks in the world, Charles Ebinger, started with saying that the situation of Poland in terms of energy is a catastrophe. Shale gas has revolutionised the energy situation in the US. 28% of the generated energy derives from this source and there are ways to increase it to 39%. Gas extraction makes room for development of rail and small, independent oil companies focusing on its extraction.

It is supposed to be the best alternative to coal – cheap and safe. 85% of the water used for fracking is being recycled, and the usage of sand is not considered as a problem because the country has its deserts and its transport creates good opportunities for development of various branches of industry. A lot of states are having a good economic time thanks to fracking (Pennsylvania being an example), poor farmers are now millionaires and the environmental standards are still the highest possible. Ebinger believes that turning away from shale gas and nuclear as energy sources is out of the question, and we in Poland should invest in drilling and fracking as much as possible, in order to use this source of energy as much as we can.

Another perspective on this industry was put forward to us by the members of NGOs, like the FracTracker Alliance – a grouping of activists from all over the US, comprised of both scientists and ordinary citizens. Their research and analysis of the impact of fracking on the environment, health and regulations is really impressive.

Brook Lenker, Gwen Lehman, Paul Zeph, and John Nerbook told us about the huge scale of activities of the industry, massive amounts of bore-holes and cases of their leakage, pollution of ground water, breaking of regulations, emissions of methane and other harmful substances not only from drilling, but also compressors' sites, pools for fracking liquid and pipelines. Out of 1082 drills that have been made since early 2014, in 30% there have been some violations. An important issue is related to huge amounts of water used in the process as well as to the waste that is being created in the process that can be both in liquid and solid state, and some is even radioactive. There also have been incidents such as leakages, fires and explosions. All of this happens on private lands, where decisions on shale gas drilling are being made by individuals, but also on State Forest land.

We have also met with Kurt Klapkowski (Director Bureau of Oil & Gas Planning and Program Management, Department of Environmental Protection) and Dan

Devlin (State Forester, Bureau of Forestry, Pennsylvania Department of Conservation & Natural Resources) in the State Department of Environmental Protection, Conservation & Natural Resources. They assured us that the issue of negative effects of shale gas exploitation on nature is not a problem as Pennsylvania has the best regulations, highest standards, efficient controls that make any breaking of the law impossible, the waste goes to special dumps and the level of recycling of the water used in the fracking processes is at 90%.

The problem is that on such a huge amount of drilling sites there are just 87 inspectors...

We heard the same story in the Pennsylvania State House. Gas is cheaper and better for the environment than oil and coal, the owners of land are making money out of lending it to the extraction companies and new jobs are being created. Sadly the state itself does not have much revenue as the level of taxation is low – just 5% of profits from the production go to the state coffers, because governing Republicans have no interest in raising the state taxes, as they often are also owners of land and extraction companies.

We could see for ourselves how the situation looks during two days in the woods of Pennsylvania and during the meetings with local activists. For me it was definitely the most interesting part of our visit to the US.

Ralph Kisberg and Barbara Jarmoska, working with the Responsible Drilling Alliance, showed us how the exploitation of this “clean” and “safe” resource looks in real life. The extraction sites are all over the place, even in protected areas such as parks or reserves. Pads erected for drilling and the infrastructure connected with the process are really close to each other. Thousands of trees are being cut to make place for them – the same goes for leveling of the hills and bringing rocks from the mines situated in other states to harden the ground.

The whole building process takes months, which means movement of thousands of trucks for 24/7, a non-stop illumination of the terrain by very strong halogens and lots of noise. When the extraction starts, not much changes for the better. Although trucks disappear, gas pipelines are being built, which means cutting hundreds of thousand trees, causing irreparable damages in the ecosystem, uncontrollable soil erosion and floods, getting more and more dangerous each year. The costs are borne by not only nature, but also the local communities and the state itself – public money is being poured into the rebuilding of roads, bridges and buildings.

Biologists think that we will observe no life in the creeks and rivers



Photo: Flickr by CREDO-Cuomo Policy Summit 8/22/2012

in the area in just three-four years time, and that the fight with the toxic materials coming to them from the bore-holes will be lost. Sedimentation filters that were supposed to stop the pollution coming from upstream look just like stockings, filled with an unknown substance. If they don't stop the threat, it may mean the end of the whole Chesapeake Bay, to which the streams flow.

It is not only nature that changed. Pennsylvania was a state in which people lived out of tourism and agriculture. In just four years everything changed – tourists disappeared and farming collapsed. Right now these are mining and industrial regions (let us remember that shale gas exploitation is not just limited to drilling – new companies emerge, offering pipes and chemistry for the fracking liquid, huge depots of trucks and heavy equipment etc.)

Local culture and lifestyle completely collapsed. The workers of the extractive industry come mainly from other states – these are 2 thousand men that are far away from their families. Their arrival to a previously calm neighbourhood resulted in the expansion of the prostitution, night clubs, crime and drug trade. An epidemic of heroin addiction on a large scale broke out – in a small town of Williamsport it resulted in 14 deaths by overdose last year alone.

“It's like a tsunami”, Barbara said to us.

I think it is the best definition of the shale gas boom.

The daily existence of the inhabitants became a nightmare. They often invested the work of their whole life (or even a few generations!) in buying houses in what earlier was a beautiful region, while most of the owners of the neighbouring land that they lend for extraction live in cities or even other states. For them it is highly beneficial, as after assessing the potential of the Marcellus Shale the prices of land went over the

roof, while the prices of housing in the region plummeted. Even if someone would be interested in buying them up, the banks do not want to give credit for such a transaction.

But the local inhabitants do not give up. Jenny from the Responsible Drilling Alliance succeeded in banning drilling in the park where she lives. 7 days before getting permission for drilling there was a big protest and 4 thousand signatures were gathered. The permission was not given to the company. Next year drilling will start just near the forest – close, but not in the park itself. The problem is that horizontal fracking will be going in that direction...

One of the problems is the attitude of local politicians – most of them are now millionaires thanks to the Marcellus Shale. Corruption is on the rise.

On February 13th 2012 Pennsylvania authorities voted for the so-called ACT 13 – regulations regarding shale gas extraction in the state. 7 cities decided to question these rules, stating that “fracking, waste pools and pipelines must be allowed in each zone of the binding spatial plan – including housing sites – if buffer zones will be maintained”. Citizens and local communities decided to appeal the laws which forbid the doctors from telling patients about the influence of the chemicals used in the fracking process on their health.

The Supreme Court of Pennsylvania ruled that some of the key parts of ACT 13, that were fundamentally incompatible with the wishes of the citizens of the state were also inconsistent with the constitution of Pennsylvania and the Environmental Rights Amendment that guarantees them “the right to clean air, clean water and the preservation of natural, spatial, historical and esthetic values of the natural environment”. This paves the way for a successful fight against fracking with local legislation.

This may even result one day in a ban.

Right now first a moratorium and finally a ban was decided in the state of New York. It is a huge success of activists. We had an honour of hearing their first hand experience. In Ithaca we have met Karen Edelstein and Joseph Wetmore, Sara Hess and her husband Jeff Furman, Irene Weiser, Stefan Senders. In Seneca Lake it was Joseph Campbell, Lou Damiani and a local journalist Peter Mantius that talked to us, while at the Cornell University we have met some very brave women that succeeded in having a ban on fracking in the town of Dryden – Ellen Harrison, Joanne Cipolla – Dennis and Marie McRae. They all told us stories about an unequal yet successful fight for protecting nature, public health and their quality of life.

The activists from this state have support from scientists from the local science institutions. Professor Anthony Ingraffea is the co-author of the “Cornell Study” – the first one showing that shale gas is dirtier than coal in the whole production process.

Professor Ingraffea explained to us why he thinks that there should be a global moratorium on shale gas. Unconventional hydrocarbons are the last generation of fossil fuels on Earth – if we burn them up future generations will be left without them. The method of its extraction is highly invasive on nature and can result in polluting water and soil. It also means creating so much waste that their recycling will not be possible – yet the effect on climate change will be so huge that it may even lead to the end of civilization.

“It is just not worth it – the effect on the climate, environment and human health is so drastic that we have no time left for discussion. Each dollar spent on this technology is a dollar less for renewable sources of energy” – Ingraffea said.

“Fracking for oil and gas is suicide!”

A possibility to see for our eyes how pads with bore-holes look like, what changes does this process make ie. in the countryside, how do life conditions change in the regions where extraction starts – all of this is knowledge and experience that is priceless. It also gave us arguments for talks with decision makers and the extraction companies in Poland that often point to the US as an argument for searching for and exploiting of shale gas. They also like to show how inexperienced we are and how much we do not know on the subject. “Have you been to America? No? That is the point! ‘Gasland’ lies, you need to see it on your own eyes to understand it” – they say.

We have seen it. Now we understand.

This text is an abridged version of the article from the website of the campaign, “Citizens control”, conducted by the Institute of Civil Affairs, INSPRO.

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Paulina Lota is an expert of advocacy in INSPRO, for the project “Citizens control – guardians of good energy”

It was science that stopped fracking in New York



Dr Sandra Steingraber

Fragment of remarks from Sandra Steingraber’s, Ph.D. speech at the post-rally victory party in Hilton Hotel in Albany, reposted with permission from EcoWatch.com.

In 2008 when our moratorium was first declared, the state of knowledge about the risks and harms of fracking was rudimentary. The science on fracking was a vast pool of ignorance and unknowing; on the far banks of that pool were what looked to be faint signals of harm.

As the years went by, those signals grew stronger. By 2012, when the revised draft Supplemental Generic Environmental Impact Statement (sGEIS) was released, there were about 60 studies in the peer-reviewed literature.

But exponential growth is an amazing phenomenon.

Two years later, when the NYS Department of Health released its final public health review of fracking, the number of studies in the peer-reviewed scientific literature had exceeded 400. All together, these studies show that fracking poisons the air (especially with benzene) and contaminates water. They show that old wells leak. They show that new wells leak. They show that cement is not an immortal substance and cannot always create, for all time, a perfect gasket that seals off the fracked zone from everything above it.

The studies show that methane leaks from drilling and fracking operations in prodigious amounts and so poses serious threats to our climate. And they show evidence for possible health impacts, including to pregnant women and infants.

Those initial faint glimmers of danger turned into the warning beacon of a lighthouse.

The conclusions reached by the New York State Department of Health—that fracking has not been demonstrated to be safe as currently practiced and that there is no guarantee that any regulatory framework can make it safe—are echoed in literature reviews conducted by three other scientific shops. These include a compendium of findings compiled by my own group, Concerned Health Professionals of New York, a statistical analysis by Physicians, Scientists and Engineers for Health Energy, and a major report from Canadian province of Quebec.

Four independent teams of public health scientists looked at

the data and came to the same conclusion: Fracking carries known and unknown risks of harm for public health and the environment upon which public health depends.

But, let’s be clear. Science alone did not stop fracking. The data received a big assist from a well-informed citizen movement that took the scientific evidence to the media, to the Department of Environmental Conservation, and to elected officials, including the Governor himself.

It was the people who spoke scientific truth to power.

You all accomplished that in two ways.

First, you issued invitations to scientists to come into your communities—into your church basements, town halls, middle school gymnasiums, chambers of commerce, and Rotary Clubs. Thus, for a couple years running, some of us PhDs and MDs spent a lot of Friday nights and Sunday afternoons in one small town or another in upstate New York, giving Powerpoint presentations and laying out the data for audiences of common folks and town board members.

Every church and town hall became a seminar. This cadre of traveling scientists and health professionals included Tony Ingraffea, Bob Howarth, Adam Law, Bill Podulka, Larisa Dyrszka, Kathy Nolan, Mary Menapace, Sheila Buskin, and Yuri Gorby, among many others.

The second way science was disseminated to and by the people was through the public comment process. Do you recall the 30 Days of Fracking Regs? Remember those days? A few of us laid out the science like a trail of breadcrumbs, and you all followed. In these and other ways, we sent 204,000 well-informed, scientifically grounded comments to Albany. They spoke very loudly.

Science alone is just a lot of black dots on white mathematical space. Like a musical score that sits on a shelf, it doesn’t become a song until someone picks up the score and sings it. And you sang it! You informed your friends and neighbors about the science and so pushed the needle on public opinion. You changed providence itself.

But even a grand citizen chorus, informed and aroused by science, was not sufficient to ban fracking. There was a third element: a governor with the willingness to listen to the science and with the courage to stand up to the oil and gas industry at a time when other political leaders seem to be following a policy of capitulation and appeasement.

It required a governor with vision, a governor who could imagine a New York economy undeterred to the latest inane idea for blasting more fossils out of the ground and lighting them on fire.

Governor Cuomo, I have never met you. But, over the past five years—other than my husband—you are the man I’ve paid the most attention to.

Thank you. Thank you for providing the surprise plot twist to our story. Thank you for revealing yourself, in the final chapter—and, God, what a page-turner that was—as our protagonist.

Thank you.

Of course, this story of ours is not done. I myself am leaving in a few minutes to drive to the courthouse in the Town of Reading, New York, along the banks of Seneca Lake where forty defendants are being arraigned tonight as part of an ongoing civil disobedience campaign to stop Seneca Lake from becoming a gas station for fracking.

This dastardly plan involves repurposing old, crumbly salt caverns underneath the shoreline to serve as storage vessels for vast quantities of methane, butane, and propane. From the Seneca Lake salt caves, the fracked gases will be pushed into pipelines—including, perhaps, the one that you are fighting—and propelled along by compressor stations.

Including, perhaps, the one that you are fighting.

The gas in the Seneca Lake salt caverns is not for us. The terminus of the pipeline is hundreds of miles away, and, Crestwood Midstream—the Texas-based company behind all this—makes clear to its investors that it intends to turn the Finger Lakes into the gas storage hub for the entire Northeast.

Our next battle is fracking infrastructure—from Seneca Lake to Port Ambrose, from the Constitution pipeline to the Dominion New Market Project, and from drill cuttings to liquid waste dumping.

As we go after these various proposals and projects, our work now diversifies and becomes more diffuse. But, happily, our skill set has also diversified. We’ve learned a lot over the past five years, we are battle tested, and we have wind in our wings.

Against fracking infrastructure, we will prevail. I am playing to win.

As we enter the next phase of our struggle, lets be really honest and not mythologize what have accomplished already. The whole world is watching us now and wants to know our secrets. Let’s not be exceptional. Let’s not say that New York’s anti-fracking activists were fearless and tireless.

In truth, we were scared and exhausted much of the time.

Am I right?

Our secret was that we just kept going anyway. We learned how to stick together and listen to each other. And that’s what we are going to continue to do as we throw ourselves into fracking infrastructure projects.

My friends, I’m headed to the courthouse now to stand with the Seneca Lake Defenders. It’s a tough fight, but I go with this knowledge:

The state of our bedrock is unshattered, and the state of New Yorkers is, now and forever, unfractured.

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Sandra Steingraber, Ph.D. is a biologist, recipient of the Rachel Carson Leadership Award and of the 17th Annual Heinz Foundation Award for her achievements contributing to the environment. She writes and lectures on the environmental factors that contribute to reproductive health problems and environmental links to cancer. She is co-founder of New Yorkers Against Fracking and Concerned Health Professionals of New York, and serves as Science Advisor to Americans Against Fracking. She was arrested several times for civil disobedience against gas storage in the Seneca Lake salt caverns.

Photo: Flickr by CREDO.fracking



Transatlantic dialogue on shale gas



Irene Hahn-Fuhr



Klaus Linsenmeier

Poland is in a crucial and complex situation deciding upon its future national energy strategy. The discussion about the possibilities and potentials of shale gas extraction in Poland is triggered by concerns of a balanced and sustainable energy mix, national independence and security, economic prosperity or public consultation. The lively debates on fracking of unconventional gas have been lined by a lot of hope of a "Polish bonanza" regularly taking the "US shale gas revolution" as a shining example to its own socio-economic developments.

The Heinrich Böll Foundation (hbs) as a green-political dialogue forum deemed a nurtured transatlantic dialogue on all complex aspects concerning fracking of shale gas as crucial for an informed debate on all sides. In September 2014 the hbs-offices in Warsaw and Washington, therefore, organized a study tour to the US to offer Polish energy policy experts, activists and journalists profound insights into the effects that natural gas exploration (especially the "shale gas revolution") have had on local communities. Through a series of meetings with public officials, policy experts as well as makers, local lawmakers and regulators, business representatives, and citizen and public advocacy groups the study trip gave a look at how the growth of the natural gas industry in recent years has impacted local economies, public infrastructure, public lands, and the environment. So, in a nutshell - what do we know by now?

The American Shale Gas Revolution – the Shining Example

Shale gas has become an increasingly important source of natural gas in the United States since the start of this century. In 2000 shale gas provided only 1% of U.S. natural gas production; by 2010 it was over 20% and the U.S. government's Energy Information Administration predicts that by 2035, 46% of the United States' natural gas supply will come from shale gas

The United States is expected

to become one of the world biggest oil producer of the world. The shale gas bonanza not only provides the country with cheap fossil fuel, which is helping to boost the US economy. Domestic shale oil and gas production also makes the country less dependent from foreign sources of fuel like the Middle East or Venezuela. The hot spots of shale oil and gas production are states like Pennsylvania, Dakota and Texas.

So it is no surprise that the Obama Administration embraces shale gas with some enthusiasm. When it comes to fossil fuels, burning gas promises to be a relatively clean source of energy and now even a very cheap one.

The US, however, also lacks a comprehensive energy strategy. The programmatic approach of "All of the above", pleads to leave it to the market to make the best decision on which source of energy to use. President Obama, however, tries to reign in when it comes to CO2 emissions. The Obama administration believes that increased shale gas development will help reduce greenhouse gas emissions. In 2012, US carbon dioxide emissions dropped to a 20-year low. Human and public health – so goes the argument – will both benefit from shale gas by displacing coal burning.

Shale Gas Innovation

Shale gas production is not a new invention. Shale gas was first extracted as a resource in Fredonia, New York, in 1821, in shallow, low-pressure fractures. Horizontal drilling began in the 1930s. U.S. Mitchell Energy achieved the first economical shale fracture in 1998 using slick-water fracturing. From there the boom expanded all over the country. Recent technological developments and the rise of the price of conventional oil and gas led to the boom we can now see happening in the US.

Shale Gas and the Climate

The extraction and use of shale gas, however, can affect the environment through the leaking of extraction chemicals and waste into water supplies, the leaking of greenhouse gases (methane and others) during extraction, and the pollution caused by the improper processing of natural gas. A challenge to preventing pollution is that shale gas extractions vary widely in this regard, even between different wells in the same project. The processes that reduce pollution sufficiently in one extraction may not be enough in another.

In late 2010, the U.S. Environmental Protection Agency (EPA) issued a new report, the first update on emission factors for greenhouse gas emissions by the oil and gas industry by the EPA since 1996. In this new report, the EPA concluded that

shale gas emits larger amounts of methane, a potent greenhouse gas, than conventional gas does, but still far less than coal.

The most comprehensive study of methane leakage from shale gas to date, initiated by the Environmental Defense Fund (EDF) and released in the Proceedings of the National Academy of Sciences on September 16, 2013, finds that fugitive emissions in key stages of the natural gas production process are significantly lower than estimates in the EPA's national emissions inventory (which are already quite low). The study reports direct measurements from 190 onshore natural gas sites across the country and estimates a leakage rate of 0.42% for gas production. Although the EDF study did not cover all stages of natural gas supply chain, subsequent studies are planned to estimate leakage rates in others parts of the system.

“Shale gas, argue the authors, can be regarded as a sound environmental option only if accompanied by stringent regulation

In Europe a 2014 study from Manchester University (UK) presented the „First full life cycle assessment of shale gas used for electricity generation.“ evaluating nine environmental factors beyond global warming potential. The authors concluded that, in line with most of the published studies for other regions, that shale gas in the United Kingdom would have a global warming potential „broadly similar“ to that of conventional North Sea gas. Still, shale gas has the potential to be higher if fugitive methane emissions are not controlled, or if per well ultimate recoveries in the UK are small. Shale gas is even worse than coal for three impacts. It has higher photochemical smog and terrestrial toxicity than the other options. Shale gas, argue the authors, can be regarded as a sound environmental option only if accompanied by stringent regulation.

Water and Air Quality

Chemicals are added to the water to facilitate the underground fracturing process that releases natural gas. Fracturing fluid is primarily water and approximately 0.5% chemical additives (friction reducer, agents countering rust, agents killing micro-organisms). Since (depending on the size of the area) millions of

liters of water are used, this means that hundreds of thousands liters of chemicals are often injected into the subsurface. Even though a greater part of the water is recycled and the chemicals added are becoming more environmental friendly the issues remain controversial.

Earthquakes

Hydraulic fracturing routinely produces microseismic events much too small to be detected except by sensitive instruments. These microseismic events are often used to map the horizontal and vertical extent of the fracturing. However, as of late 2012, there have been three instances of hydraulic fracturing, through induced seismicity, triggering quakes large enough to be felt by people in the United States. However, the injection of wastewater from gas and oil activity in deep disposal wells can trigger slightly larger quakes when water is pumped near an already stressed fault, according to the U.S. Geological Survey. Therefore, following a number of slight earthquakes, a moratorium on wastewater disposal in underground wells was introduced in 2011 in central Arkansas. Fracturing on a large scale remains a major concern in the context of the drilling industry.

Where to go?

Shale gas fracturing provides the US with a cheap source of energy and makes the country less dependable from foreign sources of fuel. So industry and the security community are eager to support the shale gas industry. Though shale gas fracturing is conducted on a large scale in the US, too little is known about the impacts of the industry on public health, the environment and the climate. The availability of this unconventional gas in the future also is in the center of a controversy. Some experts argue that it will be fueling the US industry for decades, other count that the gas bonanza will come to an end within this decade.

On the background of the success story of shale gas in the US economy, some experts expect that shale gas will expand worldwide. China is estimated to have the world's largest shale gas reserves. Also many European countries look into their shale gas options.

The benefits and perils of shale gas production widely vary from country to country. Europeans therefore carefully should study the experiences with this fossil fuel source. Not all US states happily embrace this technology. States like New York and Maryland decided to have a moratorium on shale gas drilling, that became permanent for New York State in December 2014. Not only environment groups strongly argue against shale gas. It is predominantly the local population that resists

shale gas fracturing due to its negative effects on the communities. This is an important development for Europeans to study carefully, as the geological situation is different than in the US, but also because Europe is more densely populated.

Given the insecurity about the many aspects on shale gas fracturing in present and the availability of shale gas in the future Europeans should think about where to put their scientific energy and economic resources in. Europeans especially should give up subsidizing fossil fuel industries. Given the enormous success of the German energy transition, renewable energies are the best alternative to any sort of fossil fuels from all aspects: public health, the climate and as recent developments prove also from an employment point of view as well as an all over economic development. Countries embracing these modern alternate technologies can make advantages of the "first movers" benefit in the near future.

Revitalizing Transatlantic Relations for a Green Economy

Both Europe and the United States can point to regional success stories in the area of low carbon growth. The Transatlantic Energy and Climate Network of the Heinrich Böll Foundation brings together opinion leaders, legislators, and policy experts from both sides of the Atlantic that are committed to achieving policy change in support for a low carbon economy agenda that creates sustainable jobs, strengthens local economies and helps to fight climate change. The Climate Network fosters a transatlantic dialogue through measures including public speaking and study tours, roundtable discussions, Climate Media Fellowships and by widely publishing energy reports across the United States and Europe.

Therefore, the Marcellus Shale Study Tour 2014 was one of the means by which the Heinrich Böll Foundation promotes professional international networks as well as an open and fair dialogue on sustainable energy policies. We hope that its results provide an interesting source of information for transatlantic exchange on shale gas.

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Irene Hahn-Fuhr is the director of the Heinrich Böll Foundation in Warsaw

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Klaus Linsenmeier is the director of the EU office of the Heinrich Böll Foundation in Brussels. From 2009 to 2014 he was the director of the Heinrich Böll Foundation North America in Washington D.C.

Transatlantic Energy and Climate Network is generously co-funded by the Delegation of the European Union to the United States in Washington

Three questions to scientists



Dr Seth B.C. Shonkoff



Jake Hays

Dr Seth B. Shonkoff and Jake Hays from PSE Healthy Energy responded to the three questions of Zielone Wiadomości

Zielone Wiadomości: In Poland coal is the principal source of energy. Natural gas is touted for its potential to reduce GHG emissions by edging out coal as an electricity or heating source. Should shale gas be a bridge to clean energy in Poland?

– The notion that natural gas produced from shale is a bridge to a clean energy future is no longer viable. This idea was promulgated by the industry and accepted by some of the large environmental nonprofit organizations early on. However, it was based solely on the fact that natural gas burns cleaner than coal, ignoring the broader lifecycle climate implications of the overall development processes (e.g., production, transmission, etc.). Research on the lifecycle greenhouse gas emissions of shale gas development only began to surface in 2011. Since then the idea of shale gas as a bridge fuel has been increasingly called into question.

Natural gas is comprised mostly of methane, a potent greenhouse gas that is leaked and vented into the atmosphere during many stages of production and transmission. According to the current scientific consensus from the latest IPCC report (AR5), methane is 34 times as potent as carbon dioxide over a 100-year timeframe and 86 times as potent over a 20-year timeframe. Not only is methane more potent than scientists initially thought, but most research suggests that far more of it is escaping into the atmosphere from oil and gas production.

A notable exception to this research comes from a study funded and supported by the Environmental Defense Fund and a number of oil and gas companies (Allen et al. 2013). In fact, the study suggests that methane emissions are actually far lower than previous U.S. EPA estimates. It estimates that upstream (at the well site) methane emissions from the natural gas industry amount to just 0.42% of gross annual domestic production of associated (oil wells) and non-associated (gas wells) natural gas. This is a very low number and the fugitive losses reported in this study are 10-20 times lower than those

calculated from more complete (field-level) measurements.

There are several reasons for the discrepancy in Allen et al. and most other research on methane emissions associated with oil and gas development. For one, the sites selected in the study are probably not representative of typical unconventional gas development. The study uses a relatively small, non-random sample of sites selected by the oil and gas industry rather than random, independent samples. Further, it is not clear what types of gas wells were sampled for flowback measurements and therefore the results might have little to say about shale gas development. Additionally, the study only looks at upstream emissions and does not look at the complete life-cycle emissions. This is important because methane is also emitted as natural gas travels to consumers through compression, processing, storage, transmission, and distribution and research suggests that these emissions are much larger than previously thought. While more investigations are needed, the results from Allen et al. conflict with most other studies on methane emissions, particularly those conducted by independent researchers (i.e., not under industry oversight) measuring field-level emissions or top-down estimates (See, e.g., Pétron et al. 2012; Pétron et al. 2014; Karion et al. 2013; Peischl et al. 2013; Caulton et al. 2014; Schwietzke et al. 2014; Schneising et al. 2014).

Regardless, consensus science now suggests that a direct switch to natural gas from coal would not achieve the emission reductions needed to slow climate change. Additionally, other studies indicate that natural gas produced from shale may actually be worse for the climate than coal. Consequently, the scientific community largely rejects the idea of shale gas as a “bridge fuel” So to answer your question, no, shale gas should not be a bridge to clean energy in Poland.

ZW: Shale gas is extracted using a controversial method of hydraulic fracturing or „fracking”. You know very well this technology and this industry. What kind of legislative restrictions must be introduced so that mining be safe for employees, local residents and the climate?

First, we must be clear on the terminology. As you correctly identify, “fracking” is short for hydraulic fracturing, which is a method of well stimulation that has been used by the industry for decades (since the 1940s). However, only relatively recently has fracking been used alongside other technologies (e.g., horizontal drilling) to extract natural gas from shale and other unconventional formations on a commercial scale. It is the hydraulic fracturing or fracking of shale formations that is problematic, not fracking per se. The public often uses the term fracking colloquially as an umbrella term to refer to the entirety of shale gas development. However, fracking technically only refers to one part of the process of developing na-

tural gas from shale – a process that is perhaps less concerning than some of the other aspects of development that take place closer to the earth’s surface. For instance, surface spills, wastewater disposal, and well casing failure are all parts of the overall development process that present a greater likelihood of environmental contamination than hydraulic fracturing itself.

Now, when we talk about regulations and legislative restrictions we can only do so in the context of mitigation. No amount of regulation will completely eliminate all externalities associated with this industry or make it safe for employees, local residents, and the climate. The question isn’t about making it safe, only about making it safer. Of course, no type of energy production is free from externalities and the question becomes what level of environmental and public health risk a society is willing to accept.

To the extent that shale gas is being developed, regulations should of course be as strong as possible and permits should only be granted in direct proportion to inspection capability. Unfortunately, there is no indication in the United States that even the toughest of regulations have been able to reduce the risks of this industry to an acceptable level. Part of the reason for this has to do with the capability of regulation bodies, which are often understaffed, underfunded, and unable to respond to the rapid growth and complex nature of this industry. The other reason is that there are some inherent risks to shale gas development that no amount of regulation or legislative restriction will adequately remedy, such as well casing leaks, intense truck traffic, or accidental spills.

Nonetheless, there are a few basic guidelines that should be followed by any country developing its shale gas resources to minimize risk, which at the very least include robust monitoring regimes and rigorous enforcement mechanisms. These should extend beyond hydraulic fracturing and the production process to include the eventual abandonment of wells, which, as many tend to forget, stay in the ground forever and continue leak methane and associated production wastes. There is a need for greater transparency and the full disclosure of all chemical compounds used in and produced by the development process should be mandatory. There must be comprehensive baseline studies of nearby ground and surface waters prior to drilling. There must also be appropriate setback distances between shale gas activities and sensitive receptors, such as homes, schools, and playgrounds. Finally, public health professionals should be sufficiently integrated into government agencies and they should also be trained on how to respond to residents who may be presenting symptoms associated with toxic exposures related to shale gas development.

ZW: Governor Andrew Cuomo recently announced a ban on fracking in New York State. There was big pressure on Go-

vernor from citizen activists. How have scientists contributed to this final decision?

The decision in New York was ultimately based on the New York State Department of Health’s (NYS DOH) review of the scientific environmental health literature on shale gas development. The NYS DOH report cites persistent information gaps and increasingly clear cumulative risks to human health as the reason for the recommendation to prohibit shale gas development in the state of New York. From the very beginning Governor Andrew Cuomo made it clear that he would let science, not politics, guide his decision on whether or not to enable shale gas development in the state of New York. Fortunately, the Governor stayed true to his word and was able to arrive at a policy decision on shale gas that was based on the weight of the scientific evidence.

Scientists contributed significantly to this final decision not only in the research they conducted, but also in the ways in which they placed this research in front of policymakers and in the hands of the general public. What makes our organization (PSE Healthy Energy) unique is that we take the science one step further than most university research labs and put it in places where it can actually inform energy policy. Science should not exist in a vacuum and we believe that scientists have a duty and responsibility to communicate findings to both the general public and policymakers, especially when they concern public health.

In the end, the decision in New York was probably based on a number of considerations besides public health. There are many other concerns about shale gas development, such as its impact on the climate, ecology, and other industries that are important in New York, including agriculture and tourism. The heavy industrial pro-

cesses involved in this intense type of fossil fuel extraction just aren’t compatible with what most New Yorkers want for their state. In the end, this decision would not have come to pass without an active citizenry that put pressure on the Governor. However, being able to point to a growing body of scientific evidence demonstrating significant environmental and public health risks certainly made a tough political decision a lot easier.

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Seth B. Shonkoff, PhD, MPH is Executive Director, PSE Healthy Energy, Oakland, CA and Visiting Scholar, University of California, Berkeley, CA. Dr. Shonkoff is a contributing author to the Human Health chapter of the Intergovernmental Panel on Climate Change (IPCC) Fifth Assessment Report (AR5). His current work focuses on the human health, environmental and climate dimensions of oil and gas development in the United States and abroad, especially on interaction between the climate and human health dimensions of shorter-live climate forcing emissions (i.e., methane, ozone, black carbon, sulphate particles, etc.) and on the development of more effective anthropogenic climate change mitigation policies that generate socioeconomic and health co-benefits.

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Jake Hays, MA is Director, Environmental Health Program, PSE Healthy Energy, New York, NY. Jake Hays has worked as the Director of the Environmental Health Program at PSE Healthy Energy and research associate at Weill Cornell Medical College since 2011. His principle focus has been on the environmental and public health aspects of unconventional oil and gas development. He is currently pursuing a J.D. at Fordham University School of Law in New York City, where he serves as a board member of the Environmental Law Advocates and a staff member of the Environmental Law Review.

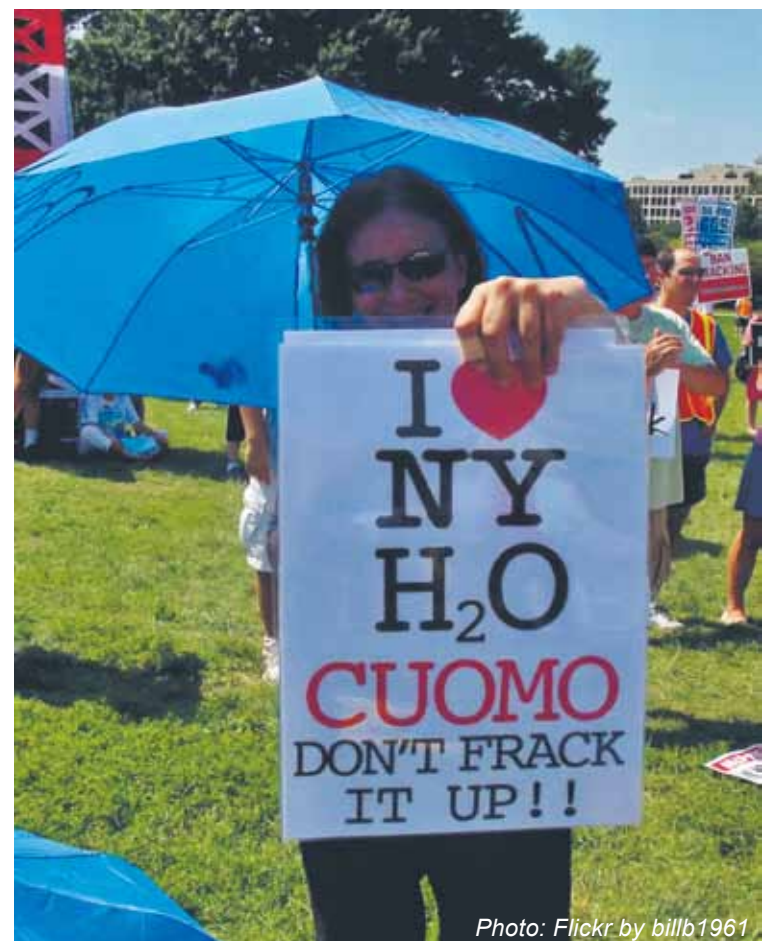


Photo: Flickr by billb1961

FRACKING?

No, thanks! It's too risky



Ewa Sufin-Jacquemart

Reflections after the Marcellus Shale study tour, organized by Heinrich Böll Foundation's offices Warsaw and Washington.

The industrial revolution and constant economic growth based on burning fossil fuels degrade our world, causing climate change that threatens life on Earth, triggering mass extinctions and depleting natural resources. If we look closely at the shale gas sector, which has been growing for over a decade now, we will see, in a nutshell, all those threats, and more...

Let's make no mistake about it – the exploration and extraction of shale gas or oil (but also tight gas extracted from sandstone) is nothing like the extraction of conventional natural gas. It is not about pumping gas contained in rock caverns to the surface, but consists in the extraction of microscopic gas bubbles trapped in the rock, that has to be crushed underground. Drilling is initially done vertically and then horizontally, spreading in several directions for a few kilometres from the initial point. The next stage is to „stimulate”, i.e. frack the deposit, by pumping underground at high pressure huge amounts of fracturing fluid consisting of water, sand and a mixture of chemicals. The fracturing fluid then rinses gas or oil from the crushed rock (with which it can enter into unforeseeable chemical reactions), and some amount of it is left underground. There is no way to predict today what consequences that may have in the future.

When our generation has long used up the extracted gas, the next generations will have to deal with the release of methane and toxic substances from the ground.

The recovered part of the fracking fluid (between 20% and 40% of the initial volume) returns to the sur-

face along with the extracted gas – it is highly toxic waste and needs to be disposed of. Approximately 3% to 8% of the extracted gas escapes into the atmosphere along with chemical vapours, causing air pollution. Human errors, technology failures (mostly occurring during the well cementing phase), the inability to fully control the underground fracturing process and difficulties with the disposal and utilization of the huge quantities of waste and wastewater, too often result in contamination of soil, surface water or groundwater.

Constant growth – more and more, faster and faster...

Shale gas extraction is an excellent illustration of the disease of our time, which is the hegemony of supply-side economics and the imperative of constant economic growth - we consume ever more and at ever faster rates, using more resources and creating ever more waste and pollution. For the extraction of shale gas requires growing numbers of drills to exploit profitably the whole deposit.

In a competitive free market economy, where there's no long-term management of a valuable resource and where everything that is produced is marketed immediately, a rapid increase in the supply of gas leads to a decline of its price. The production of gas from each drill is high in the first year or two, and then rapidly decreases and remains at a low level for the rest of the process. Therefore, to maintain a high level of production and income, the new drills have to be made at an increasing rate which grows as the market prices of gas go down. The more drills there are, the more gas ends up in the market and therefore the lower the price, which in turn leads to more drills.

In Poland, shale gas deposits cover almost one-third of the country's area. It is hard to imagine what number of wells would be needed to explore all of them. If the intensity of drilling were to be similar to what can be found on the Marcellus Shale in Pennsylvania, we should expect at least hundreds of thousands of wells.

Climate change - is shale gas really a good „bridge fuel”?

Since natural gas is a cleaner fuel than coal, and its burning emits less gre-

enhouse gases, it should be a “bridge fuel” between coal and renewables, quickly leading to substantial reductions in CO2 emissions as one of the instruments to tackle climate change.

However, some scholars argue that shale gas is a „bridge to nowhere”, due to important methane leakages. It is doubtful whether the requirement to apply „green completion” at the wellhead, imposed in the US from 2015, will fully offset this effect. In Poland no one even mentions the need to use this technology because of the fear that it might „alienate investors” ...

Nature - victim of the human quest for power and profit

Drilling wells near human settlements often triggers legitimate protests, especially when a landowner gives his land for lease and profits from it (sometimes significantly), while the neighbours suffer all the serious inconveniences of living next to a drill, such as drilling noise, the noise and dust caused by the intense traffic of trucks, slippery roads sprayed with dangerous wastewater from gas production, intense bright light (day and night) from the burning flare and drilling rig lighting. Over time, drilling wells also start to pose risks to the health of humans living in the nearby area because of air and water contamination.

That is the reason why mining develops quickly in forests and fields away from human settlements, albeit at the expense of ecosystems and wildlife. Under pressure from higher levels of authority, which support the mining industry, the administrators of public forests and protected natural areas have little means to resist the powerful and influential mining corporations. It is also difficult to mobilize local residents to protect endangered wildlife, as they tend to be relieved that the drilling wells will be situated away from their own backyards, and do not realise that it is only a short-term postponement of the fate they will have to face anyway.

Soon afterwards they discover, to their great surprise, the pace and extent of the transformation and destruction of

natural heritage, the declining attractiveness of their region, the collapse of tourism and a decline in real estate prices.

Surrounding forests quickly become scattered with mining pads, each containing five to nine drilling rigs. Underground or surface pipelines are built connecting to these. To make the gas flow, powerful compression stations are installed. In order to provide water for hydraulic fracturing, artificial reservoirs and water tanks are constructed along with a network of underground or surface water supply systems, and, if the regulations do not prohibit that, outdoor pools are also formed to contain the returned toxic fluids.

Millions of trees are cut down, which has multiple and serious consequences including soil erosion and runoffs of sediments or waters from the winter thaw into rivers, which causes flooding. Mass forest clearings to make the way for access routes, pipelines, aqueducts and mining fields have besides that a massive impact on the ecosystems. The thinned forests get penetrated by species that used to live on their peripheries, and skittish species that need peaceful and quiet habitats move deeper into the forest or go extinct.

The „Shale-Gas Monitoring Report” published by the Pennsylvania Department of Conservation and Natural Resources shows that the foresters are facing yet another problem: the invasion of alien species. The machinery and vehicles used for constructing roads, drillings and other installations are being transferred between regions along with the stones and gravel used for paving and isolation. Along with them, plants, insects and microbes migrate and quickly start to thrive along the forest clearings made for the roads and pipelines, subsequently invading further parts of the forest. In large swathes of the Pennsylvania forests, where the gas industry has developed, the foresters are now using chemicals to fight with great effort (and at a significant cost) with 88 invasive alien species. Although before the development of shale gas production, invasions of alien species have also happened, now their scale and the resulting disruption of ecosystems are incomparably greater.

These facts should serve as lessons for all the countries: fracking should be definitely banned from protected natural areas.

Yet it is very hard for environmental activists and residents of the threatened areas to reach policy makers and mainstream media with their awareness-raising message. In Poland, the forests and natural protected areas are under a mounting threat. Roztocze, one of the most beautiful and environmentally richest regions in Poland, which should be granted UNESCO biosphere reserve status this year, after much effort and money spent on documentation, is the most striking example of that. It was the Ministry of the Environment that took the initiative to make Roztocze a UNESCO reserve a couple of years ago, and today the very same Ministry wants to transform the beautiful forest and agro-tourism region into a shale gas mining area.

Water, Earth's most valuable natural resource

We all know that water is the most essential element for life on Earth. In order to be suitable for consumption and not cause serious diseases, water must be clean.

Large-scale extraction of shale gas poses a threat to water resources, because a single hydraulic fracturing procedure uses up approx. 20 thousand cubic metres of water, which in Poland would mean 1000 tank trucks. And the bedrock needs to be stimulated many times using a mixture of water, sand and various chemicals. The chemicals account for 0.5% to 2.5% of the fracturing liquid volume, but this is enough to make the recovered fluid a highly toxic waste that is impossible to purify and cannot be turned back into drinkable water. In Pennsylvania, poorly refined liquid is re-used as fracturing fluid, or is sprayed on the forest roads to protect them from dust, what makes them slippery and dangerous and pollute the air.

Huge amounts of water are used in the regions where shale gas is produced. In front of every mining field that we've seen in Pennsylvania there was an information board that provided the amount of

On the hills, which were once covered by dense woodland, wide clearings in the forest now stretch for kilometres, with a new road, pipeline and water supply system, all marked by metal posts painted in two colours. There are several protruding hatches and pipes fenced with railings. (fot. Barbara Siegińczuk).



water needed for fracturing and how much water could be collected from the environment. The amounts ranged from 1.8 to 4.5 million gallons per day. To reduce the road transport of water, there are underground water pipelines, artificial lakes and metal reservoirs built exclusively to serve the needs of the mining industry.

In the process of shale gas extraction, drinking water reserves get contaminated.

In Pennsylvania, there were 234 known cases of water pollution in October 2014, as the representative of the Department of the Environment, Mr Kurt Klapkowski, informed us. Yet in Poland the audiences at official conferences are regularly told by the ubiquitous „shale geologist” Mr Paul Poprawa that „not a single documented case of water pollution due to shale gas extraction has happened so far in the US; there has been one case in Wyoming, but it happened in very specific geological conditions...”. Contamination does occur, there have been multiple cases of it and they have been widely communicated to the public. People who live close to the drilling wells sometimes detect the taste or smell of hydrocarbons in their tap water. Rivers, streams, ponds and lakes also get contaminated, along with the fish and other creatures that live in them.

Despite that, in Poland exploratory drilling permits are issued even for areas where the so-called Major Groundwater Reservoirs (GZWP) are situated in between the drilling wells and the gas deposits. The problem concerns even huge reservoirs of exceptionally pure water, such as the GZWP No. 407 in Roztocze, which should be protected, but still isn't.

Meanwhile, just drilling through the reservoir contaminates the water, because the drilling fluid containing chemicals has to come into contact with it. The drilling well subsequently gets encased with cement and piping on the groundwater level. However, as pointed out by Ron Kaler, the mining field manager with whom we spoke at length in Pennsylvania, one has to be very careful about the quality of the cement and the molding of the well. „We get ready cement from Halliburton, who later conduct the fracturing, but first they come up with a proposed composition and we have to agree on it together,” he said. We also learned that an independent inspector hired by the main investor PGE (Pennsylvania General Energy) has to be there on the drilling site to monitor the drilling process together with an expert from PGE.

Drilling and cementing is a sensitive operation, the conditions vary every time and it's easy to make a mistake.

According to a report prepared by the Schlumberger company, the tightness of drilling wells does not stand the test of time, and if the accidents occurring in the course of drilling as a result of cement work failures account for only about 5% of all incidents, after 20-30 years the proportion of leaking wells increases to approx. 60% due to pipe corrosion and cement aging. No one can say today how vast the long-term damage caused by the leaking will be and how much it will cost to undo the damage. Already today it happens that depleted gas production fields get abandoned due to the declining gas prices and the resulting very low profitability, which means bankruptcy for small businesses. In Pennsylvania, the authorities uncritically support the shale gas business despite the fact that the envi-

ronmental degradation caused by decades of coal mining still hasn't been overcome.

A threat to democracy

All of that happens at the expense of local communities and residents. In the US, where the owner of the land also owns the minerals embedded in it, it was easy to find residents willing to lease their land to mining companies in exchange for high rents and a share of profits from gas production. For a professional negotiator, it is not difficult to convince and win over the landowners, and in the US only very few of them, those who were the best informed, were able to resist. Contracts are formulated in such way that the landowners practically cannot terminate them, which is why conflicts within communities and even within families are a regular occurrence. Add to this the risk of corruption, conflicts of interest, bought media and local and state authorities who are under the pressure of Big Oil. As a local anti-shale activist from New York State told us: „Fracking business killed off democracy in America in just one decade”.

In Poland, despite the lack of open public debate and widespread manipulation of information (e.g. workshops and training sessions funded by the national environmental and water management fund, represent shale gas as a „renewable energy”), so far we have managed to avoid acts of violence against, and arrests of the people who oppose the shale gas industry.

However, the attack on democracy is on the rise because - as the foreign shale gas investors are withdrawing from Poland - the Polish government has decided to unfurl the red carpet in front of investors from the entire hydrocarbons mining business at the expense of its own citizens. To this end, the Minister of Treasury has drafted a special hydrocarbons bill which is expected to be submitted to the Parliament in the first quarter of 2015.

The “special hydrocarbons bill” exempts exploration, extraction and transportation of hydrocarbons from most of the existing regulations, squandering the basic achievements of democracy.

It gives full control to the government and its provincial governors (regional representatives of the state), while taking away the right to speak from citizens, local authorities and even state institutions and bodies. If the bill is voted into law, drilling will become legal practically everywhere, the permit procedures will be shortened to such an extent that environmental impact assessments will no longer be required, public consultations will no longer be held and environmental organizations will lose the right to participate in administrative proceedings. The Minister of Health will lose the right to protect spas against the expansion of the mining industry, national park directors will have no say about plans to drill in their parks, the same will happen to State Directorate of Forestry and the forests it administers, and to the Heritage Protection Offices and the national heritage sites they are in charge of. One-person decision-making powers will be vested in the provincial governors, which runs counter to the principles of democracy and will create vast room for corruption, conflict of interest and abuse of power. This bill resembles Pennsylvania's Article 13, which exempted drillings from spatial management regulations, leading to large numbers of drilling rigs quickly springing up in areas identified in local spatial manage-

ment plans as natural, agricultural or residential. Despite the fact that the Supreme Court has overturned those regulations, none of the contentious drilling wells have been closed and they continue to generate local conflicts and be the subject of judicial battles fought by local activists.

Because of the fact that Poland imports gas from Russia, the geopolitical situation, the Russian-Ukrainian conflict and the historical aversion to Russia are being used to promote shale gas production. In an effort to discredit the anti-shale movement, activists are accused of being supported by Russia and Gazprom, an allegation that has never been substantiated. Strangely enough, those advocating the development of highways and the automotive industry are never labelled „traitors of the national interest”, even though Poland imports 97% of its oil from Russia, much more than of gas, and oil accounts for 25% of total energy consumption, much more than gas.

In the United States, activists and common sense prevail in some states: thanks to the huge mobilization of citizens and local governments, in December 2014 the governor of the State of New York Andrew Cuomo completely banned fracking (the ban replaced a moratorium that had been in place for two years).

Conclusion: we need “energy round-table” and a moratorium

Governor Cuomo's ruling was based on two premises: firstly, that there is no demonstration of regulations and the systems of control of shale gas production that would ensure the safety of people and the environment (an argument made in about 400 research reports that have reached decision-makers thanks to good co-operation between researchers and activists), and secondly, that the technology involves potential climate hazards.

Professor Ingraffea argues that in order to save future generations from a climate catastrophe, we should abandon fossil fuels as soon as possible, make a transition to a low-energy and low-carbon economy, and use the money that today is being spent on the extraction of hydrocarbons on research and development of low-energy buildings and renewable energy.

It seems that people in Poland are starting to understand this, too. The survey shows that 70% of Poles support renewable energy, and only less than 20% see a future for fossil fuels. That is why we need a real round-table energy debate that would bring together the authorities, experts, trade unions, local governments as well as social and environmental organizations. What we need is an open and honest public debate about energy, including the extraction of shale gas and other unconventional hydrocarbons. Perhaps such a debate would lead to a ban of hydraulic fracturing, like it did in the State of New York.

We should all sign the petition calling for a moratorium on the exploration and extraction of shale gas in Poland until reliable public consultations have taken place: <https://obywatelekontroluja.pl/przylacz-siel/podpisz-petycje/>.

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Ewa Sufin-Jacquemart is director of the Green Zone Foundation (Fundacja Strefa Zieleni) and the Green Party activist, involved in issues of ecology, energy and climate. She leads the Green Centre for Women's Congress.

Photoreport: Barbara Siegieńczuk



Map of shale gas wells in north-eastern Pennsylvania, handmade by Matt Kelso for FracTracker Alliance. Orange points: drilled wells, violet points: permits, yellow points: violations. Photo: FracTracker Alliance.



Soon, more trees will be cut down along the road, a new clearing will be made, the road, the pipeline and the water supply will advance a few kilometres further, new pads of drilling wells and installations will be constructed - until the entire gas deposit gets extracted.



This is not a ski slope but a clearing made for the pipeline. At the top of the hill you can see the drilling well, and at the bottom - the roof of a house.



For the purposes of hydraulic fracturing, water reservoirs have been created in the felled forest - one in the form of a lake, the other in the form of a gigantic metal container.



Fracking, lobbying and democracy

On fracking lobby, democracy and connections between shale gas developments and climate change - Gasland's director Josh Fox in conversation with Alternet.

Cliff Weathers: Do you ever feel like they're putting a target on your back?

Josh Fox: For the last four or five years, it's not just me but everyone in the films — the science experts, those dedicated to get the word out on fracking — who have suffered unbelievable amount of attacks, both of the most nefarious and deceptive kinds as well as just the normal criticisms as you might have with any kind of new information. But what's most disturbing is the persistent smear and misinformation machine that's constantly coming after people in the films and myself, and everything that has to do with this issue. It's become damaging to our civic dialogue in the United States.

Today, we just assume that there are going to be corporations that attack information and lie to protect their interests, and they'll do it in the most devious and blatant fashion. It's become part of American life. The so called debate on issues has one side that is just lying. That's not a debate; deception is not a point of view.

When I started working on the film, it was already a very contentious and controversial issue in my area. So, in the Upper Delaware River Basin, there were a lot of people who wanted to lease their land to make money off of this. And it was surprising how quickly that broke down along certain cultural lines, and it exacerbated political tensions that were there for a long time. So, I became the face of people who were trying to preserve the beauty and integrity of the environment and the health of the community. And there were a lot of people who wanted their money and who were willing to put their neighbors in jeopardy and put all of us in harm's way, and really destroy what is one of the most astoundingly beautiful areas of the world (the Delaware River Basin), which is also the watershed area for New York City, Philadelphia and Southern New Jersey.

So from the very beginning I knew it was going to be hot in the kitchen. But I could never anticipate the deviousness, the bald-faced lying and character attacks. Every every single type of bizarre attack was waged against both of my films, against me personally, and against the people in the films. It's a constant presence in life.

There are people who will go to restaurants to tape things and do things with hidden cameras. I find that really shocking. I can't see how you could ever campaign for a point of view when your principle mode of operation is deception. This is all designed to create confusion and doubt with the mainstream audience. It creates a cloud of doubt around the real reporting, so that people don't really know

what to believe or who to trust. Our work is profoundly researched and verified by as many sources as you can possibly imagine. Every line in those movies has been vetted not only by our staff, which is very fastidious about accuracy in our reporting, but also by HBO who wouldn't put it on if it had a line that was untrue.

CW: One of the people in Gasland, Part II was a man who left the Republican Party over his disgust with hydrofracking. To the casual observer, this is a partisan issue, but that's not the case with the people you've met. How do you think fracking changes people who are directly affected by it?

JF: It's created an enormous amount of conversation between people who wouldn't ordinarily speak to each other because of that partisan divide. It's not a partisan issue. I tour constantly with the films to talk to environmental organizations. And when the fossil-fuel industry comes to these towns and then it's „we're going to destroy everything you have,” that is the equalizer. People come together pretty quick, and there are conversations between people who are social conservatives and people who are progressive Democrats.

And then you realize that these are not American companies, but multinationals that have no country, and no allegiance. And they will destroy a place whether it's Pennsylvania, Texas, or New York, or even in Nigeria, or Ecuador, or Peru. You realize that there's always been a group of people who are „expendable” in the face of business. Whether they were massacred by the National Guard striking at coal mines in Colorado a hundred years ago or today in the Niger Delta, or in West Virginia where mountains are being exploded. And right now, in the target zone are people who live in the Marcellus Shale, the Barnett Shale, or the Haynesville Shale. The fossil-fuel industry has always considered these people to just be in their way. They have no rights and they have no way of appealing through the normal democratic channels.

So, now that area of expendability has expanded and it catches all sorts of folks in its wake. So, their reaction to being subjugated by such a huge industry is going to be similar, I think, whether you're a liberal Democrat or a conservative or Tea Party person. The divide that often happens between people is one of money. Some people really want the money and some people don't.

A favorite thing I like to bring up is this recent Princeton University study. They asked „What form of rule does America really have?” They did all the research through their political science department on all these popular issues and they polled and they figured it out, and they came back with the answer.... Oh, America doesn't have a democracy actually, America has

an oligarchy; ruled by the rich and powerful.

When we're talking about what's happening in America today, I'm watching an incredible movement against fracking. I'm watching people being extraordinarily attentive to history. They're saying that we need to do all these things; to create films, events, and protests. We need to bird-dog our legislators. Recently, 300 people decided to greet President Obama at Cooperstown with anti-fracking signs. On the same day, a couple hundred people decided to greet Governor [Andrew] Cuomo in Long Island with anti-fracking signs. This is going on perpetually. I'm watching this and it's beautiful. It almost makes me feel like democracy is an irrepressible force. It's bounding back at the grassroots and local levels and it's very exciting.

CW: I was watching the original Gasland recently, and then I watched Gasland, Part II. And I noticed that the message of Gasland is so dated by comparison. There have been so many developments since. When Gasland was released, this was a subject people didn't know about and the message was really simple and straightforward. The second movie took it to another level of sophistication.

JF: I feel that way, too. I didn't know about fracking when I made the first Gasland, it really was about my journey of discovery. And I think everyone who watched that film went through that same process. I think that's why it was so successful because it told that story. But now everyone knows about fracking. And the question of the second film is that now that everyone knows about it and there's a movement out there, we want to know what's the government going to do about it. So the second film is an inquiry into why should the government get fracked. When I go to Washington, DC, I like to point out that it is the largest fracking site in the United States. The government is being destroyed with an injection of high-pressure money, and that's completely fracturing our democracy.

CW: So, what's the next film about?

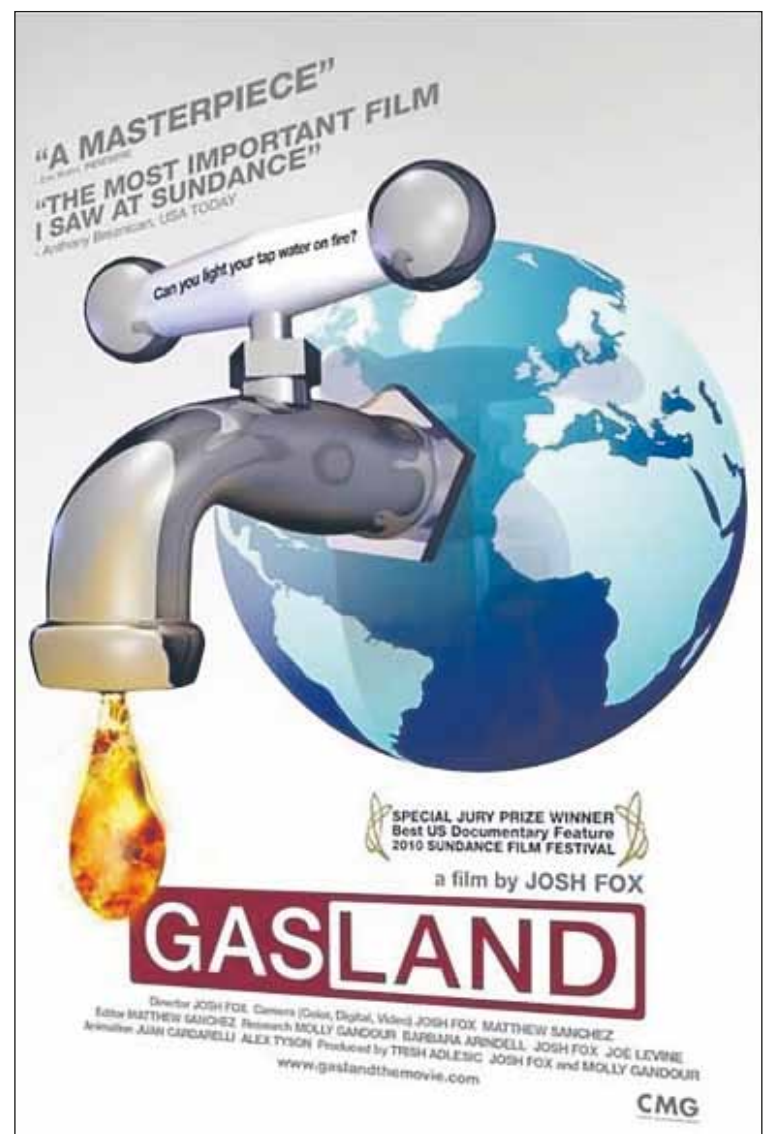
JF: I'm making another film, this one about climate. In fact, this is not a question only of emissions, pollutants and toxins, this is a question of value structures and we are not fighting just industrial corporations, we are talking about how we protect our civilization. How do we do that? Well, we do that by coming together and having common values.

It's both a private property and individual rights question as it is a communal, public property and greater human rights question. It really shows the depth of this idea of the social contract.

CW: You've become the voice of the anti-fracking movement. Is this movie also a way for you to broaden your appeal or horizons?



In the photo above, Josh Fox was a special guest at the conference in the European Parliament organized by José Bové, the MEP from the Greens/EFA Group, on the environmental and social consequences of shale gas production (Photo: Flickr by greensefa).



JF: I think it's a natural progression. We're talking about fossil fuels. Before I did any of this, I made plays and movies, and I'll continue to make plays and movies, narrative as well as documentary. So, this movie is an important next chapter in this environmental work. But I'm also working on a screenplay right now that has to do with the Iraq war; it's in its final stages.

I find these thoughts so interconnected between fracking and climate that they almost don't seem like separate issues to me. I just think fracking is the way that people understand this in a very immediate sense. 15 million Americans live within a mile of a fracking well,

and that's just the beginning of what they want to do. So, it is the manifestation of this extreme drilling campaign across the world, which will push us over the edge into a completely inhospitable planet. So, to me, they're fundamentally connected.

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Cliff Weathers is a senior editor at AlterNet, covering environmental and consumer issues. He is a former deputy editor at Consumer Reports. His work has also appeared in Salon, Car and Driver, Playboy, and Detroit Monthly among other publications.

This text in an abridged version of the interview published in the Alternet (www.alternet.org)

Drill Baby Drill or Chevron Go Home?



Interview of Zielone Wiadomości with Lech Kowalski

Zielone Wiadomości: Chevron has announced that the company is not going to continue shale gas operations in Poland "as the opportunities here no longer compete favorably with other opportunities in Chevron's global portfolio". How did you find this announcement?

Lech Kowalski: I was surprised Chevron did not leave sooner. Several years ago, there were severe doubts about the quality and access to shale gas deposits in Poland and I had a conversation with a German engineer at the ExxonMobil drilling site not far from Zurawlow. He predicted the shale gas situation in Poland was not as rosy as originally predicted by the Americans. I was pleased Chevron left.

It's as if an occupying army has pulled out its forces and retreated.

ZW: You have spent long time supporting the protest against Chevron in Żurawłów with your camera. Today, in retrospect, how do you assess the effects of your actions on the community of Żurawłów, including the films that you have made?

LK: Zurawlow is in the area where I started making a film about problems small farmers deal with in the face of the multinational corporate agri-business. This is where the farmers and I discovered a new enemy: the frack industry. At first no one had an idea what fracking was about. My first encounters with Chevron and the entities preparing for future frack testing was complete aggression. It was evident that something bad was starting to take place. I became deeply involved with this issue in Rogow where Chevron wanted to build a test well. We rented a bus for a group of farmers to go to Warsaw and meet with José Bové who I knew in France. This led to the farmers writing a petition that he presented to Tusk. Miraculously Chevron backed off but then went to Zu of the rawlow. I clearly saw that the powers involved with fracking were extremely uncomfortable with having cameras around. Many times I filmed not because I needed the material but because I wanted to help fight Chevron, the media and the politicians who were blind to the dangers they all presented to the farmers and to the land itself. I made three films in the area because I consider the fight in Rogow and Zurawlow as part of a much bigger and very long fight to come for the preservation of the planet. Films helped get the news out about what was going on in Poland. Having one film play on Arte was a big victory and I know that Chevron was very aware about the films. They continue to be shown around the world.

ZW: "Drill Baby Drill" compares two situations: in Żurawłów and in Pennsylvania. Do you think those two regions are comparable and have anything in common?

The two places are not physically similar. Farming is common to both, but Zurawlow is exclusively devoted to farming. The better question is how are the two places different? Pennsylvania is a place where drilling for oil has been going on since 1860. It is the first oil boom area in the United States. People are used to having their land leased for oil exploitation. When the "lease men" signed deals for fracking, people considered it same as leasing for oil exploitation. Now, there are over 15,000 wells and many areas are experiencing a huge variety of problems. Zurawlow has never been zoned as an "industrial zone" or mining area. Pennsylvania is also a big coal mining area and an important state for steel. Bethlehem Steel was the second biggest steel manufacturing company in the United States. Many people in Pennsylvania are happy to have fracking in the state, ignorant of the problems associated with fracking.

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Lech Kowalski, director of Polish origin living in the United States, is a cult figure of underground cinema. Known for his controversial documentary, he was described by some journalist as „a warrior fighting with his camera to redefine the art of the documentary”. He made three films about citizens' struggles against shale gas: Holy Field Holy War, Drill Baby Drill and Frack Democracy. Holy Field Holy War won three international awards of the festival FID Marseille.

The film „Drill Baby Drill” exists in six languages and can be screened here: <http://www.lechkowalski.com/en/shop/vod>

Photo: Andrzej Bąk



Chevron Leaves Poland A Pity It Took So Long

A comment of the members of the local community in Żurawłów

For nearly three years the inhabitants of Żurawłów and the nearby villages in Grabowiec commune have actively participated in conferences and gathered knowledge on shale gas – both in Poland and on the global scale. They made the dark practices of Chevron visible to the public. They also hoped that the company would respect the will of the community, drop its plans for exploiting shale gas on their land and leave Poland.

They knew that prolonging the conflict with them would make the corporation look bad in the eyes of public opinion. Protest (unprecedented in scale) was accompanied by legal actions of local inhabitants that also influenced the decision of Chevron to leave our country. It is a pity it took so long for them to make such a decision.

The events in Żurawłów are important not only for the local community, but are also of truly global importance. Corporations and governments now see that the right for self-determination needs to be upheld, and that the repressive actions are unsuccessful.

We hope that the arguments of people fighting for their future were heard by those responsible for the protection of water resources, precious farmlands and areas of ecological importance, and that the arguments will be put under consideration in any future decisions regarding mining or fracking.

The official reason for the departure of Chevron from Poland is that its investments in the country do not seem to be profitable.

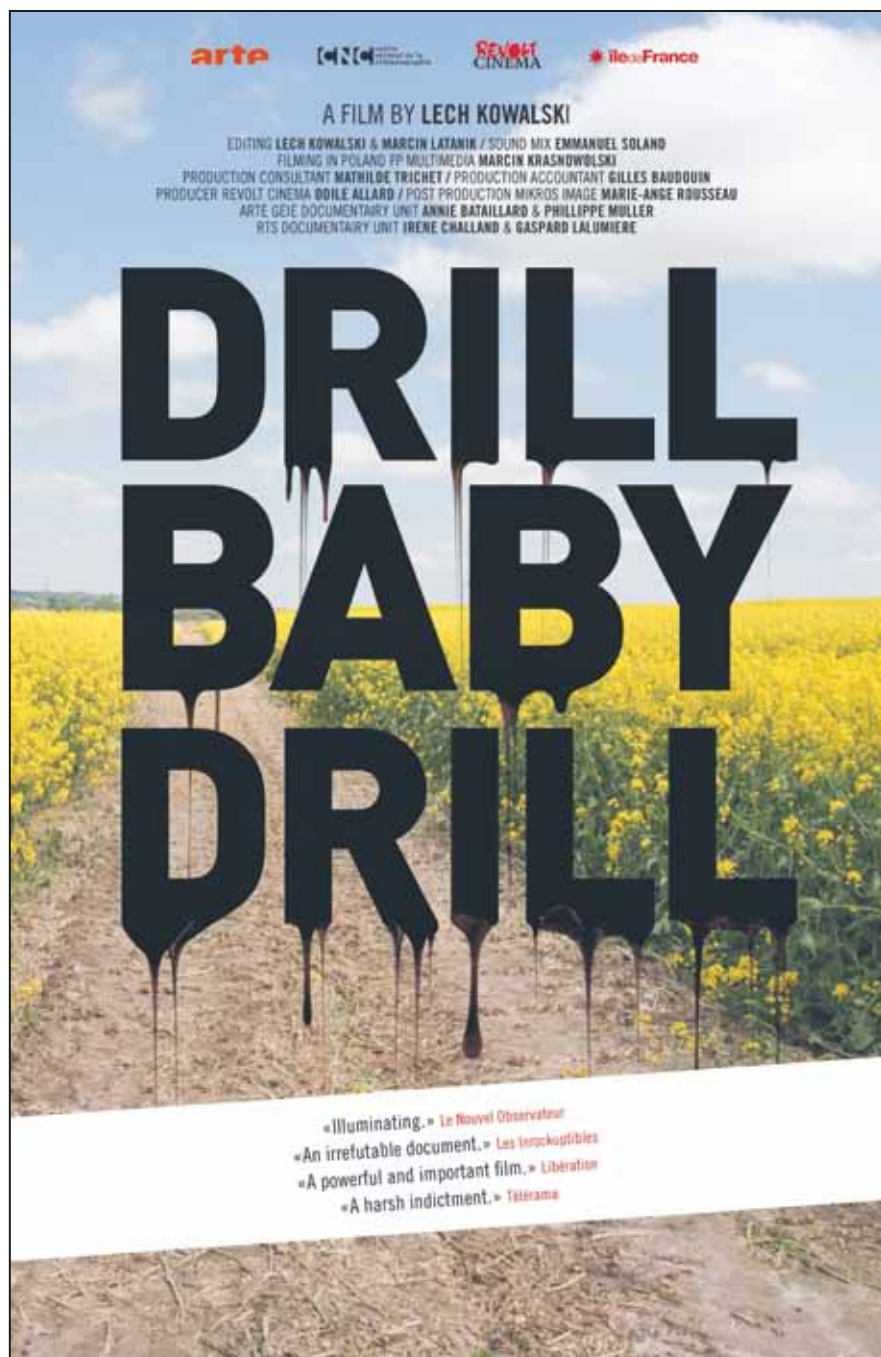
The people fighting for Żurawłów and its future have been talking about such a risk since the very beginning of the protests. They have not been heard – instead they were told they were not experts and that they just "took their concerns and fears from the Internet".



Żurawłów is a small village in the Lubelskie Voivodship where the American corporation Chevron wanted to search for shale gas using the controversial method of fracking. After 400 days of persistent, active protests by local inhabitants and eight legal actions of the company against the farmers, Chevron left the village in July 2014.



Selection of 70 photos of Andrzej Bąk, illustrating the actions of the community of Żurawłów in defense of the right to their land, forms the exhibition "Occupy Chevron - 400 days in Żurawlow", launched in December 2014 in Berlin. Pictures of size 70 x 50 cm are framed in aluminum frames. The exhibition may have subtitles in any language (Polish, English and French subtitles exist already) and can be easily transported in three wooden boxes. It is available free of charge. (fot. Andrzej Bąk).



Don't Frack Our Future

Farming and Fracking – An African Farmers' Perspective

Dr Stefan Cramer

The year 2014 has been a promising year for the struggle against fracking. More groups than ever woke up to the threats of fracking, culminating close to Christmas 2014 with the decision of New York State to uphold an indefinite ban on shale gas developments. More states and municipalities in the US are following. The Netherlands too upheld its ban, together with France and Germany. Mexico, Poland and China are continuously down-scaling their production plans and resource estimates. It looks as if the zenith of fracking has been reached already, despite new production records in the USA. Slowing demand and over-production have brought the oil price down, forcing more and more producers to close down marginal deposits.

In this global down-spiralling of shale gas interest, the year 2014 has seen little action on the ground in South Africa's Karoo Basin. Companies have had a few discussions with government behind closed doors, asking for a re-write of the mining law. The current mining law was actually toughened. It stipulates a local ownership with a 25 % free-carry by government of all future investments. Even more options of creeping nationalisation were introduced prior to the national elections on May 7, 2014. With the new ANC government firmly in power, the new Minister of Mineral Resources Ngoako Ramatlhodi asked the President not to sign the bill into law. Similarly, the Technical Guidelines have not been established. In November 2014 the government announced its intention to finally process the existing license application for three companies, while placing another moratorium on new applications. Companies are now required to redo their Environmental Management Plans, but have failed so far to call for the prescribed public consultations.

This course of events has given South African civil society some breathing time to start educating local farm workers and farm dwellers on the science and technology of fracking. This silent majority of the rural population will be decisive in the political battles that are bound to happen once exploration starts in earnest. South Africa divides land ownership between surface and subsurface rights. Under the constitution, all mineral rights are owned by the government. Thus, landowners have little incentive to consent to gas production from their land. They are left with damages to their land and will receive only little compensation for their production losses.



Emerging farmers in Nieu-Bethesda get ready for action after training in fracking geology by the author

Land ownership is hugely skewed in the Karoo. A few hundred farmers own large farms, some of them up to 50.000 hectares and larger. Together they control an area the size of the Germany. In the past commercial farmers had up to half a million farm workers. This work force was made redundant in the last 50 years by changes in farming practices. Today the Karoo produces nearly exclusively meat and wool. Small farmers are left out completely. They have no access to land and – often even more important – to water. However, this is slowly changing again. Many black-led municipalities have leased land to the black and coloured majority of the population of the Karoo. A good example is the community of so-called emerging farmers in Murraysburg, a sleepy little farming town in the Sneeu Berg Mountains. With no land ownership they cannot get access to agricultural credits. With no money, they find it hard to invest into irrigation, fencing or livestock. In addition, they have been given the much poorer soils of the town, as all good agricultural land is already in the hands of a few white farming families. Thus, they are reduced to the raising small numbers of sheep and pigs and a little backyard gardening. Still, they refuse to give up their dream of once becoming proper farmers with their own rights. They lobby hard for a land reform that will give them access to some of the better lands. Yet, the government of South Africa is stalling this process in corruption, incompetence and lack of capacity. But one thing is clear to the emerging farmers: There is no point in

fighting for land reform when the lands they might once get hold of, would be destroyed by fracking, when their future groundwater resources would be contaminated from horizontal drilling and injection of toxic fluids, when the land would be carved and parcelled by the infrastructure that comes with fracking. Thus they are vigilant and vocal. As the silent majority in the country and as the main voters for the ruling African National Congress (ANC), they matter and they will be heard.

In Peet van Heerden, the emerging farmers have an unlikely ally. His family has farmed the slopes of the Sneeu Berg Mountains for five generations and have amassed a huge farm of prime agricultural lands. But what counts even more, his family has access to the important water sources in the mountains. Some 25 kilometres of concrete-lined canals criss-cross his property and bring abundance of life to this dry part of the country. However today most of this water runs off unutilised, as he is solely concentrating on livestock and neglects crop production. The garden and vegetable fields that once surrounded his massive farm house lie dormant. After the end of the Apartheid era, new legislation that gave farm workers a minimum of protection of tenure on the farm they too had often lived for generations. But Peet and many other white farmers were quick to minimise the number of workers living on the farm to the bare minimum. They prefer to bring occasional labour from the nearby townships only when it is needed.

But he is also known as fiercely opposed to the idea of fracking. Like many of his colleagues he first thought it might be a good idea, bringing necessary economic development to this forgotten place in the middle of nowhere. But then his farmer's organization AGRI-SA sent two representatives to the US to witness fracking with their own eyes. Their report back changed the attitude. White commercial farmers realized what they would stand to lose. Not owning the mineral rights under their land they would only get the damage to their lands compensated, but would not be production partners or receive royalties as in the USA. During their negotiations with government they started to realize that fracking would be pushed through no matter what damages to the lands. Thus, they resolved to mount a concerted legal challenge. They provided unlimited financial backing to a small-town lawyer and his team to challenge the existing legal framework, with resounding success. Since 2008, when the first applications for fracking exploration rights were lodged, the authorities have not been able to create a regulatory framework that would give companies the required security to invest and make their investments safe from legal confrontation. In addition, most local farmers' organizations have now widely educated themselves about the science and technology of fracking. Today, they are the most organized and formidable opposition force against fracking in South Africa.

But people like Peet and his farmer friends are white and rich - and a minority in South Africa. The majority of the people of South Africa are black and poor - and vote for the ANC. Thus, it is easy for the ruling party to point at the white landowners and claim: They want to protect their wealth, which they are not sharing with the majority in this country. They want to protect their environment, when we are working hard to uplift the rural masses, which have been held in abject poverty by the very same landownership system that keeps these wealthy people rich. We need economic development.

Most farmers in the Karoo, white and black alike, are not convinced. They know that this dry region cannot afford another drain on its meagre water resources. The Karoo doesn't have the infrastructure, both physically and politically, no benefit from a short-lived fossil fuel boom. In addition, more jobs in agriculture and tourism will even be permanently lost than would be created by the fracking industry. Thus, perhaps for the first time in recent history, black and white farmers have the same interest, and would share in the struggle to keep this menace at the gate.

White Karoo farmers now discuss to "Lock the Gate" campaign. Research, exploration and later production require extensive access to private land which farmers can deny. They can physically lock the gate and require company representative to incur court orders, to be enforced by a sheriff, etc., all lengthy legal steps, which cost time and money. The campaign has been very successful in Australia. Emerging farmers and farmworkers currently receive training in how to influence their municipalities, when the fracking industry comes into town. The year 2015 will be decisive in this battle in South Africa. The government has announced that it will finally issue exploration licenses for five concession areas to three applications: Royal Dutch Shell, Falcon and Bundu Gas and Oil. These companies will find now, five years after their first attempts to forge into the region, a vastly changed atmosphere. They will be confronted with a population that has been better educated and organised. A number of NGOs have forged international links, and the farmers' legal challenges will be particularly strong and efficient.

At the same time, alternatives to the dreaded fracking are blooming. Currently, not a month is passing without the inauguration or the announcement of a new solar or wind energy facility in the Karoo. This region has some of the best sites worldwide for both form of renewable energy. Wind and solar create more job, interfere less with farming and the environment and are simply the way to go. The earlier the better.

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Dr. Stefan Cramer is a semi-retired hydrogeologist from Germany currently living in the Karoo of South Africa to educate local communities about the science and technology of fracking for shale gas. He has had a distinguished career in development work in Africa, Asia and Latin America.

SHALE GAS – A CHALLENGE FOR DEMOCRACY

Monitoring report

Teresa Adamska

Both global and local politics (also in Poland) have been dominated by the influence of global fuel and energy corporations, connected with the financial and military

complexes. The result is a focus on exploiting the fuel and energy resources and on monopolising the market in these sectors.

The corporate activities in Poland are connected with intense lobbying in the both chambers of the parliament, breaking the rules of

democracy by corruption or by conflicts of interests in both local and national institutions, and the administration.

How does the situation regarding shale gas search and exploitation look like in Poland? If you want to find out, a report "Shale Gas

– a Challenge for Democracy" („Gaz łupkowy – wyzwanie dla demokracji") has just been published recently.

It can be accessed by clicking on the <https://obywatelekontroluja.pl/raport-gaz-lupkowy-wyzwanie-dla-demokracji/> webpage.

A paper edition can also be ordered via e-mail: biuro@inspro.org.pl or by the phone: (+48) 42-630 17 49





Brian Moench

Dead - Babies and Utah's Carbon Bomb

A sudden and extreme spike in neonatal mortality in Utah's rural Uinta Basin is most probably related to the toxic air pollution related to the fossil fuel drilling/fracking frenzy in Eastern Utah. And the local poobahs want to kill the messenger.

Donna Young is a midwife in Vernal, Utah, with 20 years experience managing home births in Idaho and Utah. She lives in the Uinta Basin, the heart of the fossil fuel drilling/fracking frenzy in Eastern Utah. On May 8, 2013, she had her first still-birth. At the funeral service a few days later, she noted what seemed like an extraordinary number of infant graves with recent dates at the cemetery. She decided to investigate.

She didn't get any help from local authorities, but eventually information gleaned from obituaries and mortuaries revealed 12 cases of neonatal mortality (most of them stillborn, or death shortly after birth), in 2013. Looking back to 2010 revealed a modest upward trend, but then a huge spike in 2013. This is sparsely populated rural Utah. Vernal is a town of fewer than 10,000 people. But per capita, this is a neonatal mortality six times the national average. It is actually worse than it appears. National infant mortality rates have been dropping slowly and steadily for almost 50 years, including about a 10 to 15 percent drop in the last decade. Furthermore, most of Utah is about 50 percent Mormon, so the rate of drinking and smoking is less than the national average throughout the state. The minority population in rural Utah, like Vernal, is very low, and the percentage of Mormons is even higher, both of which should lower the infant mortality rates, all other things being equal

What is going on in Utah's Uinta Basin to explain newborn babies dying? An abrupt surge in teenage mothers, drug, alcohol use? No evidence of that. Is there a genetic explanation? Genes don't change that quickly. Is there a sudden onset of medical incompetence by the area's health-care providers? No reason to think so. That leaves one other possibility. Is there something happening in the environment? As a matter of fact, yes.

Major cities with pollution problems have either high ozone, like Los Angeles, or high particulate pollution, like Salt Lake City, depending on the time of year. But the Uinta Basin has both simultaneously, making it unique and the most polluted part of the state. Studies suggest that the two may act synergistically to impair human health. Add to that high levels of the by-products of every phase of the oil and gas fracking extraction process - diesel emissions and hazardous compounds like



Photo: Facebook.com/Brian Moench

benzene, toluene and naphthalene, and you have a uniquely toxic air pollution brew in Vernal.

Inhaling air pollution has the same systemic health consequences as cigarette smoking, only to a lesser degree - unless you're doing your inhaling in Beijing, China, then eliminate the „lesser.“ The signature physiologic consequence of air pollution, be it from smoke stacks, tail pipes, fracking or cigarettes, is an inflammatory response that reduces blood flow. Diseases of virtually every organ system can follow. Strokes, heart attacks, every type of lung disease, cognitive impairment, cancer, accelerated aging and sudden death, including infant mortality, all occur at higher rates among people exposed to air pollution. In the case of a pregnant mother, the placenta is compromised for the same reason, and it should be easily understood then that pregnancy complications and impaired fetal development - think birth defects, miscarriages and still-

births - can be the result. Many epidemiological studies show that to be the case. That increased infant mortality in the Uinta Basin could be the result of the increased air pollution is suggested by medical research. It is not only plausible, but very likely.

But there is more to the story, much more. If you do a Google search for „pollution in Vernal, Utah“ you will see a picture of a man at a street corner holding up a sign that says, „Honk if you love drilling.“ Vernal politicians certainly do. With jobs, increased tax base, new community recreation centers, burgeoning store fronts on Main Street, people with money to spend - what's not to like? Well, dead babies perhaps. What else is not to like? Someone who calls attention to the dead babies - a concerned midwife for example.

Young has been targeted by the community's power brokers as whistleblowers often are. She received a threatening „legal“

letter from the local hospital. She's been told by one of the local doctors that everyone wants to take her down „politically“ and ruin her career. She has also received ominous, threatening phone calls. But others are starting to speak out with worrisome observations of their own.

Since Young stepped forward, a mother in Vernal contacted us about a rare birth defect her six-month old has that threatens her baby's ability to breathe. Two houses away, her neighbor's three-month old baby has the same birth defect. Checking with the local pediatrics clinic has revealed 30 patients with the same rare birth defect. It amounts to a prevalence rate of at least seven times the normal rate of one in 2,100 live births.

This drama is also a larger metaphor with global implications. Eastern Utah could be considered ground zero for the battle to keep the world's fossil fuels in the ground. In addition to the fracking frenzy for

oil and gas in the area, Utah is also „blessed/cursed“ with the largest unconventional fossil fuel reservoir in the United States and perhaps the world - oil shale and tar sands deposits are 25 times larger than those in Alberta, Canada. Using geology-based assessment methodology, the US Geological Survey estimated a total of 4.285 trillion barrels of oil in the oil shale of the three principal basins of the Eocene Green River Formation, near Vernal, Utah.

If those deposits are extracted and burned (and the process would be much more carbon intensive than conventional oil and gas drilling), Utah would become home to the largest known carbon „bomb“ on the planet. More „game over“ for the planet than the Keystone pipeline.

The international medical community has called the climate crisis, „the biggest global health threat of the 21st century and . . . could put the lives and well-being of billions of people at increased risk.“ Throughout the world the most vulnerable will be infants and children.

Apparently that is just fine with Utah's governor and the majority of our legislature. It is certainly not only fine with, but enthusiastically promoted by, Uinta County commissioners and local politicians. It is also fraught with irony because numerous projections on global warming predict that Utah will become North America's greatest warming „victim“ outside the Arctic. Projections from 2008 suggested that temperatures may rise by 9 degrees F in Utah by 2100. Global warming calculations have only become more alarming since.

A rise of this magnitude will decimate the ecosystems that are necessary to support human life - it means dramatically more drought, shrinking snow pack and water resources, more wildfires and dead forests, unsustainable agriculture, and apocalyptic dust storms - a complete collapse of the human carrying capacity of the Western United States. And it means more dead babies, a lot more.

..... Brian Moench, president of the Utah Physicians for a Healthy Environment, is a member of the radiation and health committee, Physicians for Social Responsibility (PSR) and a member of the Union of Concerned Scientists (UCS). The opinions expressed are his own and not an official position of UCS or PSR.

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HEINRICH BÖLL STIFTUNG WARSAW

The **Heinrich Böll Foundation** is a German Green political foundation that works in over **60** countries in the spheres of sustainability, cross-cultural dialogue, and education.

Our patron, the writer and Nobel Prize laureate Heinrich Böll, personified the values we stand for: the defence of freedom, civic courage, tolerance, and open debate.

Common European values, gender democracy and energy transition are both central tenets and cross-cutting themes for the Warsaw Office. Since 2002 we have been supporting the development of civil society in cooperation with NGOs, academic institutions, think tanks, and state administration.

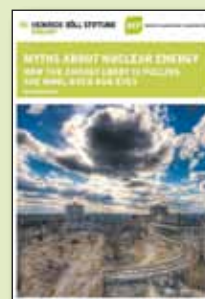
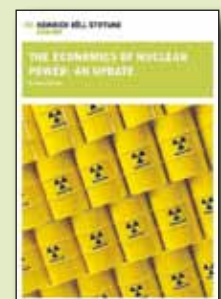
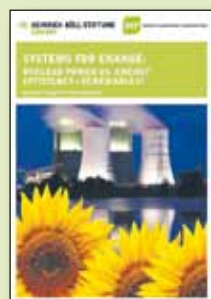
Within the **Democracy & Human Rights** programme we back social changes promoting equal rights and opportunities for all groups. We emphasise the effective functioning of public institutions, the strengthening of democratic accountability, and civic participation.

Our **Energy & Climate** programme aims to intensify discourse about the challenges presented by energy transformation and climate change. We place special importance on long-term green modernisation and energy concepts that guarantee socio-economic development, a clean and healthy environment, security, as well as consumer protection.

The **International Policy** programme focuses on deepening German-Polish cooperation related to the future of the EU, its role in the global arena, and transatlantic relations. Through various projects we create a space needed for discussion about the development of a common European foreign and security policy.

The activities of **The Heinrich Böll Foundation** can be followed online on **Facebook**, **Twitter**, www.pl.boell.org and **Issuu**, while video and audio recordings are available on **YouTube** and **Mixcloud**.

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The **Heinrich Böll Foundation** has developed a special website focused on the ideas and strategies of the German energy transition.

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