

# Old Story, New Threat: Fracking and the global land grab

Timothé Feodoroff, Jennifer Franco, Ana Maria Rey Martinez

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With demand still growing for land-based resources, including from the energy sector, what is now referred to as the global land grab continues to have momentum. Land and water grabbing involves the capturing of control of land and other associated resources like water and underground material, and most significantly, of the power to decide how they will be used, for what purposes and who will reap the benefits. Powered by transnational capital and its desire for profit, a wave of enclosures has been undermining peoples' democratic control of their environment in many parts of the world. Now this trend is expanding its reach further, this time, through unconventional gas development. One form of this new threat is called fracking, the common term for hydraulic fracturing, a fast spreading technology for extracting unconventional, hard-to-access natural gas.

Fracking is increasingly portrayed as a not-to-be-missed innovative opportunity to achieve national energy security. But the 'fracking revolution' represents a profoundly harmful new step in the old story of the corporate takeover of natural resources because of what it targets: extraction of hard-to-reach unconventional gas deposits. While fracking allegedly produces cheaper natural gas, it entails irreparable environmental destruction and the loss of community control of land and especially water resources to major companies in the oil and gas industry, especially through water diversion, depletion and contamination. Today's boom in fracking is therefore undermining the power of citizens and communities to determine how land and water is to be used and how the environment is to be managed.

The key highlights of this briefing are:

1. Fracking involves a relatively new form of the capturing of control over land and water resources involving large-scale capital and enforcing an extractive resource-depleting model of development.
2. This relatively new form of gas extraction is unfolding across all the continents, placing significant areas of land and especially vast amounts of water under threat.
3. This capture of control via fracking is realised across a variegated web of actors, coalitions of interests and institutional settings.
4. The large-scale capital at work in the fracking boom is often associated with global capital already operating in natural resource grabs elsewhere and with high-level financial flows.
5. The process of fracking for extracting unconventional gas shows new levels of ecological recklessness, especially in terms of water contamination.
6. Peoples' resistance is emerging as the threat grows.

# Old Story, New Threat: Fracking and the global land grab

By Timothé Feodoroff, with Jennifer Franco and Ana Maria Rey Martinez

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## 1. Fracking and the Global Land Grab

Anticipating an eventual drying up of the Earth's remaining coal and 'easy oil' deposits, the exploitation of unconventional energy is quickly emerging as the new holy grail of energy security. 'Unconventional' refers mainly to the different techniques to extract hard-to-access new oil and gas reserves such as extra-heavy oils, tar sands, oils in deep-sea locations, shale, coalbed and tight gas, etc. Given that the more easily accessible deposits have already been largely extracted, the newer unconventional methods are significant consumers of natural resources, as each wave of extractive technologies demands ever more capital and natural resources to wrench the material from its source. That makes this emerging global energy regime even more based on corporate enclosures and unsustainable exploitation of natural resources than previous ones. The recent worldwide boom of unconventional extraction of shale gas and coalbed methane reserves through fracking (see *Box A* on what is fracking) exemplifies how the new energy regime is closely coupled with the global land grab. Fracking is linked to the contemporary global land grab trend in three ways.

First, unconventional gas development is essentially the corporate driven and profit-led **capturing of control of land and other associated resources** like water and underground materials, but most significantly, the power to decide how they will be used, for what purposes and who will reap the profits. Fracking signals a major shift in land and water use,

whereby new economic arrangements in access, control, usage and share of natural resources are being installed in favour of transnational capital. At work in the shadow of this capture is the hand of corporate power, which threatens to undermine democratic control and management of the environment. This is being realised through a web of actors and coalitions of interests (see *section 5*) and institutional setups (*Box G* on regulation explores the various strategies used to create enabling law environments). Unconventional gas extraction is a project being imposed on – but increasingly resisted by – populations (see *section 6*). Yet it appears that citizens' efforts to put in place legal bans on fracking may not be enough, since the industry has been moving to challenge any restrictive policies (*Box H* outlines the case of Lone Pine) including bans (see *Box I* on France).

Second, extracting shale and coalbed methane gas involves **large-scale amount of land, water and capital** (as further mapped in the *section 4*). While the fracking industry claims that drilling sites do not require much space, concessions around the globe often range up to several hundreds of thousands of hectares. Chevron recently secured a 650,000-ha concession in Romania for instance, bringing to 800,000ha the total amount of land under its control in the whole country, about 3.5% of the country superficies.<sup>1</sup> In Poland, 9 million hectares, almost a third of the country's entire land area, have already been granted to corporations. As a very high-technology demanding and capital-intensive enterprise, fracking

## BOX A WHAT IS 'FRACKING'?

Fracking – short for hydraulic fracturing – is a newly popular and fast spreading technology to extract hard-to-access unconventional natural gas trapped in shale and coal bedrock formations.

*Unconventional gas* refers to methane gas deposits typically found trapped within thin dispersed layers in hard shale rock and coal bed stratum, in opposition to *conventional gas*, which are pressurised pools of free-flowing gas trapped beneath porous limestone and sandstone rock. They are more diffuse and difficult to extract, given the tight or low permeability of their geological formations compared to conventional reservoirs. The rock must be fractured to allow conduits for gas to migrate to the production well bore.

### From Conventional Natural Gas...

Porous limestone and sandstone  
Vertical drilling  
Less than a 100,000 gallons of frac fluid



### ...to Unconventional Natural Gas

Hard rock shale or coal bed formation  
Horizontal drilling and multi-wells fracking  
Up to 21 millions of gallons of frac fluid

can only be carried out with the support of the big oil and gas industry majors such as Shell, Exxon Mobil, Chevron, ENI, etc. To illustrate the huge amounts involved, Shell recently announced its decision to invest 10 billion dollars in shale gas in Ukraine.<sup>2</sup> With the capital behind fracking coming from the conventional corporate fossil fuel industry, it is unlikely that unconventional gas will address the social and ecological challenges of the contemporary energy issue (see *section 2*). This same sector of global capital is already implicated in other land grabbing activities and speculative endeavours (see *Box F* on the fracking money).

Third, the extraction and exploitation of unconventional gas represents the deepening of an **extractive model of development** already known and questioned, if not rejected, by many people as antithetical to their values, concerns and aspirations. Fracking, with its reckless exploitation of land, water and energy extends this model even further since it involves a kind of industrial operation that is more invasive, leaving a deeper and more destructive environmental footprint than conventional production, including seismic activities (see *Box B* on UK). An especially worrying threat here is to existing water resources. Water is especially at risk of contamination (as further exposed in the *section 3*), and diversion on a massive scale (see *Box C, D and E* about South Africa, Poland and China). That fracking is water-intensive can be seen in the case of the US state of Michigan<sup>3</sup>, where the corporation Encana has laid out plans that would require 4 billion gallons of groundwater<sup>4</sup> – the equivalent of 16 days worth of the public water supply for the entire state.<sup>5</sup>

## 2. How does unconventional gas work against a green future?

The global explosion of demand for natural resources, within the context of rising fossil fuel prices, concerns about 'peak oil', and increasing public awareness of environmental degradation, has made diversification of energy sources in

a 'sustainable' manner an urgent priority for governments and corporate discourses. Unconventional gas is embraced by some governments as a potential 'game changer' with respect to their own energy security, while at the same time promoted by the industry as a much cleaner energy source than any other fossil fuel, purportedly delivering lower greenhouse gas emissions than conventional oil products. It is hailed as a 'triple win' -- delivering energy self-sufficiency, economic development, and, environmental benefits too. But although fracking may seem to be an attractive "alternative", its "beauty" is turning out to be only skin deep.

Fracking is foremost a big business venture – and 'promoting national energy security' that is proving to be a flawed justification. Even in the case of the US, where this argument is quite strong, the amount of shale gas that is committed to export accounts for approximately 60% of current domestic consumption.<sup>7</sup> As to the claim that fracking contributes to economic development, the burden of proof remains on the frackers. A growing body of evidence, as well as growing resistance in places where fracking is taking place (or threatened to take place), suggests that it is not responding to the 'development' concerns, needs or aspirations of many people; and that simply shifting from one type of oil and gas plunder to another does not automatically address underlying issues of uneven patterns of access, distribution and consumption of energy – and may even reinforce existing problems with these. Regarding the alleged environmental benefits, it is at best naïve, at worst disingenuous, to speak of shale gas as a cleaner 'bridge or transition fuel' towards an energy future based on renewables. Fracking rather shifts the oil and gas industry towards ever more capital-intensive and destructive methods and extends humanity's oil dependency long in the future. Simply reimagining shale gas either as 'cleaner' than conventional fossil fuels, or as a 'renewable' (it has recently being argued in some quarters that methane gas could be a better feedstock than corn, soya and palm oil in the production of biofuel)<sup>7</sup>, does not make it so.

In a nutshell, the extraction process for unconventional natural gas consists of drilling beneath underground fresh water resources, from few hundred meters until several kilometers, until shale or coal bed formations are reached. The drillings then process horizontally for up to two kilometers. Each site, or pad, can host several horizontal wells. This horizontal borehole is filled by section with small packages of light explosives, shooting projectiles creating preliminary fissures into the rock to release the trapped gas. After, a high-pressure injection of frac fluid is pumped into the drilling well, a cocktail mix of water, sand, toxic chemicals and other solid components such as fibers further fracturing the rock formations, opening up joints where the gas is stored and allowing it to flow back into the production casing and up the well to the surface. This is 'fracking'.

The fracking industry portrays the practice of hydraulic fracturing as safe, having undergone decades of development. This is very partial truth, at best. Although some of the technical processes have been tested since the late 1940s, the use and combination of new technologies such as horizontal drilling, multi-well pads and high frac fluid volumes is less than one decade old. Fracking, in this form, was first undertaken in the Barnett Shale of East Texas, US, in 2002. It is hence a recent procedure, not as tested, seasoned, and mastered as the industry would like us to believe and as the growing body of evidences of hazardous incidents suggests (see *Box* on UK).

### 3. What are the ecological risks of fracking?

The supposed potential benefits of unconventional natural gas extraction conceal the higher stakes: the resource exploited is not the 'easy gas and oil' as previously but requires different, more invasive, reckless and hazardous technologies. Those come with real concerns about drinking water contamination threatening public health, air pollution, instances of fracking-induced seismic activity, etc. Water contamination and depletion can happen in the form of accidental spills or leakages through cement casing failures during the fracking process or through the wastewater management. Industries repeatedly argue that there is no risk posed by fracking to aquifers or underground water sources. This self-serving myth is sustained on two ideas, both of which have been proven flawed.

**Cement Casing Failures** First, that the cement casing technology is too good to ever crack or corrode. The bad news, as research has demonstrated, are that cement-casing failures happen and allow methane and other hazardous chemicals to migrate to some water source or somebody's water well. This has been shown in several water contamination cases though the industry constantly insisted such occurrences were impossible.<sup>8</sup> Among scientists, there is growing concern about the lack of reliability of cement casing. Each time the well bore is re-pressurized for the fracking of a new section, it puts the cement at risk and can provide pathway for leaks. It is a chronic and known problem from the industry, yet the latter keeps the failure numbers secret and limits its definition of fracking to the actual rock fracturing, excluding from its scope the process of pumping water, chemicals and gas up and down the well.<sup>9</sup>

**Underground migrations** Second, that shale and coal bedrock formations are too far below surface water and underground water for them to get contaminated. Once again, such contamination cases have been demonstrated, especially in the US.<sup>10</sup> Indeed, as 60 to 80% of the frac fluid injected down the well remains in the underground, it can from here potentially move through complex networks along with some gas up until the aquifer zone.<sup>11</sup>

**Frac Fluid** The actual composition of the frac fluid is kept secret by the industry, and a lot of contention arises from it. While industry claims it contains only products such as sand, salt, water a study undertaken by the US House of Representatives in 2011 noted that out of 2,500 fracking inputs, 650 are chemicals, several of which are carcinogens and hazardous air pollutants.<sup>12</sup> BTEX compounds such as benzene, toluene, xylene, and ethylbenzene, notorious for having harmful effects on the people's central nervous system, appeared in 60 of the hydraulic fracturing products used between 2005 and 2009. The major concern here is that these chemicals can leak into both surface water and underground water sources during the fracking process and even afterwards. In Kentucky (U.S.) a leak of frac fluid into waterscapes triggered the widespread death of protected fish specie in a nearby creek.<sup>13</sup>

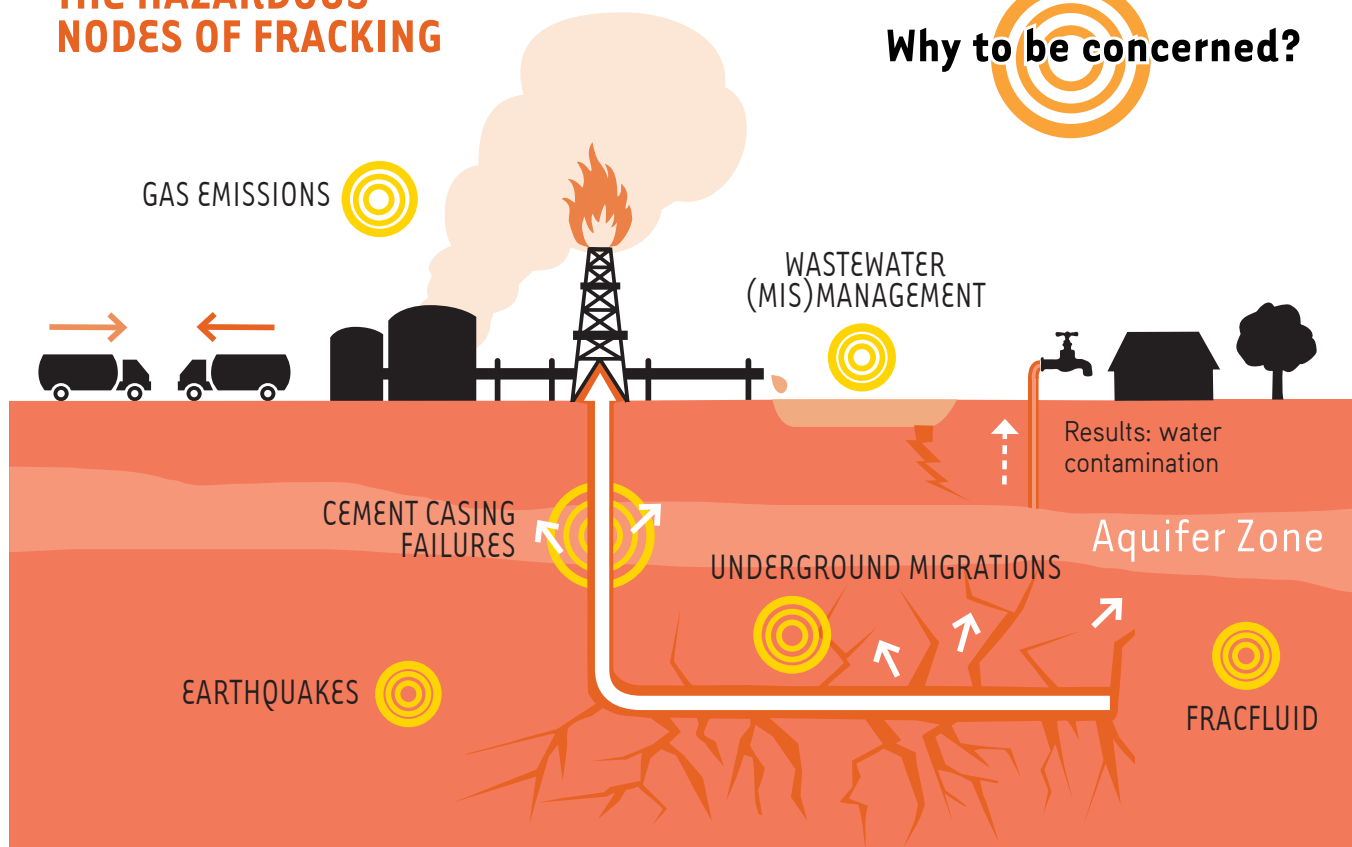
**Waste Water (mis)Management** Wastewater, also known as 'produced water', is also a major risk in fracking. Part of the chemical-laced frac fluid injected down the well is pumped out with the gas, bringing with it chemicals, traces of oil-laced drilling mud, and all the other toxic substances previously trapped in the rock: iron, chromium, salt, and radioactive materials such as Radium 226.<sup>14</sup> Most of the wastewater is produced in the first few months of production and, as it is toxic, must be disposed through

## BOX B A FRACKING-INDUCED SEISMIC EVENT: THE CASE OF LANCASHIRE, UK

In April and May 2011, the seaside community of Blackpool, in Lancashire county of Northwest England – one of six active fracking sites in the UK – experienced two earthquakes, with magnitudes of 2.3 and 1.5 on the Richter scale respectively.<sup>21</sup> The area, which sits on England's most important shale gas basin, had become the operating site for unconventional gas exploration by Cuadrilla Resources Ltd, a UK company. Studies commissioned by the company to examine the possible relationship between the earthquakes and hydraulic fracturing operations at the Preese Hall well (near Blackpool), concluded that the quakes were caused by direct fluid injection during the fracking process.<sup>22</sup> A panel of independent experts appointed by the Department of Energy and Climate Change (DECC) confirmed this finding and stressed the probability of further quakes. But despite these clear findings and despite the ongoing rise of citizens' protests since the first earthquakes occurred, the company was allowed to resume its fracking activities anyway.<sup>23</sup> Last September 2012, Lancashire country's planning chief denounced Cuadrilla for breaching fracking conditions.<sup>24</sup> The company was found to be drilling beyond an agreed time limit and beyond a cut-off date in a protected region for wintering birds. Amidst the growing controversy and risks, the British government is sticking to plans to increase shale gas production in the UK. Cuadrilla started fracking in Sussex in July 2013. And while the company is given the green light to frack, concerned citizens who protest are being subjected to criminal charges.<sup>25</sup>

## THE HAZARDOUS NODES OF FRACKING

## Why to be concerned?



recycling (not commonly applied), through re-injection, or via surface treatment through processing at wastewater facilities. Today, most water treatment facilities are not designed to handle fracking wastewater. Hence, produced water is often left in large ponds to eventually evaporate or leak, or dumped into mainstream waterways. In many cases, the contaminated wastewater also ends up in rivers and water streams.<sup>15</sup> Recently, in Colchester County, Nova Scotia (Canada), Atlantic Industrial Services was planning to discharge into local and connecting waterways 4.5 million litres of fracking wastewater into the Chiganois River. The Chiganois River is one of many that eventually feeds into the Atlantic Ocean by way of the spectacular Bay of Fundy, an ecologically significant area also known for having the highest tidal range in the world. The wastewater was not tested for many chemicals common in the fracking process.<sup>16</sup> Fortunately, the dumping plan was stopped in time to prevent the disaster from materialising.

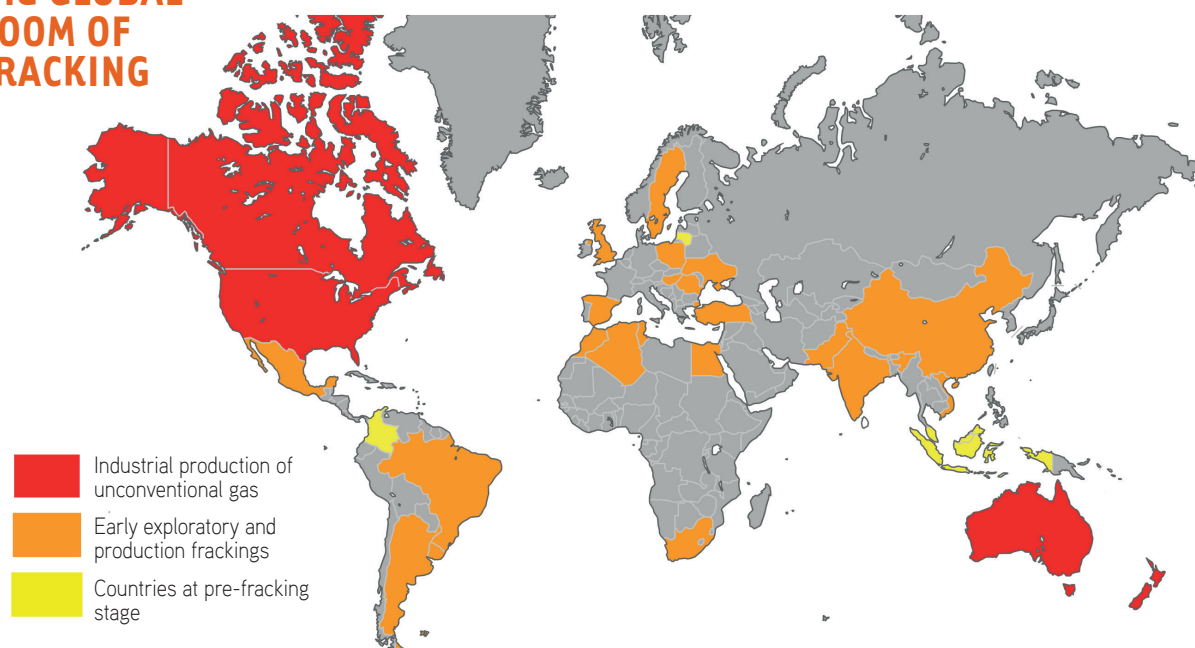
**Gas Emissions** Also, industry claims that unconventional natural gas extracted through fracking is a much cleaner energy source than any other carbon intensive fossil fuel. This is in part due to a perception that natural gas has a lower greenhouse gas (GHG) footprint. However, ongoing research has begun to dispel this myth. According to a recent study in the U.S. “[methane] emissions from existing wells in production are much higher than previously

believed.”<sup>17</sup> It has been found that over the full life cycle of unconventional gas production — including direct emissions of carbon dioxide (CO<sub>2</sub>) from combustion of the natural gas, indirect emissions from fossil fuels used for land clearing, extraction and transportation of the gas, and methane emissions (CH<sub>4</sub>) at the drilling pads — GHG emissions are higher compared to conventional gas, coal or oil, not to mention that CH<sub>4</sub> releases are more dangerous than CO<sub>2</sub>.<sup>18</sup>

**Earthquakes** Last but not least, fracking has been linked to significant seismic activity. Fracking process itself and later the underground injection of wastewater already has triggered many earthquakes; including several major cases in Ohio, Arkansas, Colorado (US) and Lancashire (see Box B on UK). In July 2013, a team of scientists re-asserted the danger of fracking water injection for triggering earthquakes.<sup>19</sup> Researchers linked to the industry have argued that they were only marginal and relatively small compared to what mining, for instance, induced in the past.<sup>20</sup> The lead author in the research worked for ExxonMobil on development and exploration projects, and it must also be highlighted that the Durham Energy Institute at Durham University has been criticized for having ties and being funded by the energy industry. Faced with the growing body of evidence, industry was forced to recognize that fracking does have unintended seismic consequences.



## THE GLOBAL BOOM OF FRACKING



### 4. Where is the global boom of fracking happening?

Unconventional gas endowments are reshaping the global energy landscape. With the biggest reserves, alleged to provide up to 'a century' of self-sufficiency supply, North America, especially US, could see the revival of its energy power; Australia could become a prime player in the unconventional gas market; basins in Northern and Southern Africa hold a great deal of economic promises; major reservoirs in Eastern Europe could allow the region to gain independence from Russian gas (as a result Russia is generally opposing unconventional gas exploration); in Latin America, Argentina could reverse its fortune and revitalise its economy by exploiting its vast resources in unconventional gas. The Asia Pacific zone also has endowments, although it is not clear at this stage whether these would foster cooperation or deepen tensions; important unconventional gas reserves are allegedly located in South China Sea. Cambodia, Thailand, China, the Philippines, Vietnam, Malaysia, and Taiwan have all overlapping competing territorial claims that prevented stable production sharing agreement.<sup>26</sup>

The exploration and exploitation of shale gas and coal bed methane formations, initially started in North America since the 2000s, is becoming a worldwide practice, unfolding unevenly – in other words, faster in some places and more slowly in others. Some countries have already reached full-scale industrial production (I). But most are still engaged in early prospection and production tests (II). Others are not fracking yet, but have adopted legal frameworks to facilitate it, issuing land concessions and exploration permits (III) (see map).

(I) **Industrial production** of unconventional natural gas is happening in four countries.

The **United States** is the world leader, with unconventional gas resources accounting for half of its global gas production in 2010. The extractive character of this scramble is reflected in the 35,000 wells fracked every year, and the resulting water use. It is estimated that no less than between 70 and 140 billion gallons of water are being used per year, approximating the annual water consumption of 40 to 80 cities, each with a population of 50,000.<sup>27</sup> A recent report calculated that 280 billion gallons of toxic wastewater have been produced in 2012, while 145,000 ha of land have been directly damaged since 2005.<sup>28</sup> Cases of water contamination are mushrooming throughout the country. In **Canada**, around 200,000 wells have already been fracked, mainly in the provinces of Alberta and Saskatchewan. The dangers of allowing the fracking industry to capture the control of this resource can already be seen in the corporations' aggressive reactions to governments' attempts to stop fracking (see box H on the Right to say No). **Australia** produces in smaller volumes shale gas from basins in Western Australia and extracts coalbed methane from the Queensland and New South Wales. Among corporations, the trend is for gung-ho; in the pristine wilderness of Kimberley region in Western Australia, the company Buru recently announced it was starting to frack, expanding their prospective interests up to 17 million hectares, about 40% of the regional territory.<sup>29</sup> In **New Zealand**, several dozen wells have been fracked. Allegedly, national gas corporations have already obtained concessions for more than 4 million hectares.<sup>30</sup> This corporate capture of land and water through fracking has occurred within ambiguities, shadows and gaps in existing regulatory frameworks, and resulted in

several cases of water contamination by mismanagement of frac fluid.<sup>31</sup>

**(II) Early exploration and production**, whether in the form of undertaking evaluations or pilot project drillings, includes a much larger group of countries.

In **Mexico**, said to have large reserves, the state-run oil company is pouring 250 million dollars into drilling 175 wells for shale gas in the northern states of Nuevo León and Coahuila -- among Mexico's driest states, yet the company has not provided information from where the 7.5 to 30 million litres of water per well required would come from.<sup>32</sup> **Argentina's** endowment is also estimated to be huge and has attracted many corporations. The US energy company Apache invested about 400 million dollars in several projects, controlling over 1.2 million hectares of land.<sup>33</sup> Chevron also invested 1.5 billion dollars in the nationalized company YPF for shale gas development.<sup>34</sup> The permits issued are allegedly tainted with irregularities, and marginalized indigenous communities have seen their water resources depleted to the point where the authorities are now distributing bottled water.<sup>35</sup> In **Brazil**, big reserves in the North East have already attracted Shell, which started first drillings.<sup>36</sup> In **Uruguay**, the US company Schuepback has obtained 1.6 million hectares of concessions, while the state-owned company ANCAP is conducting test drilling.<sup>37</sup>

**South Africa's** Karoo desert is also allegedly rich in shale gas resources, and Shell is battling to be allowed to start exploratory drillings (see also Box C on South Africa). In **Algeria**, where unconventional reserves are 4 times higher than conventional ones, the national company Sonatrach, backed-up by

government's fiscal incentives, is partnering with companies such as ENI, Repsol, Talisman and Shell to exploit shale gas.<sup>38</sup>

**Morocco** is following the trend, having already granted exploration permits to five undisclosed international corporations.<sup>39</sup>

**Tunisia** has undertaken several frack jobs in the Bir Ben Tartar concession, South East of the country, operated by Chinook Energy and Cygam.<sup>40</sup> In **Egypt**, taking advantage of the political turmoil and lack of regulatory framework, Shell, Apache and Dana have started fracking directly in the Nile valley.<sup>41</sup> Operations are threatening vital aquifers sources in a water scarce region. A village of 25,000 residents has already been destroyed by a flood of contaminated water after Dana's fracking.<sup>42</sup>

**China** has enthusiastically joined the scramble and is emerging as an Asian leader of unconventional shale gas production (see also Box S on China), already prompting growing concerns for water grabbing. **Pakistan** approved in 2012 a new exploration and production policy with improved incentives to companies for developing shale and tight gas reservoirs. In 2013, a shale gas policy framework was adopted, aimed at fundraising 1.5 billion dollars of investments.<sup>43</sup> As a result, the first drillings and frack jobs are scheduled to begin in July 2013.<sup>44</sup> **India** gave the green light in April 2013 to shale gas exploitation after a first round of exploratory fracking in 2010, conducted by the state-owned ONGC. With the clearance obtained, the company plans to access more than 100 concessions blocks – of unspecified size – with an initial investment of 2 billions dollars.<sup>45</sup> Concern is rising, since Indian shale gas exploitation will require major land acquisitions while two-thirds of the population depends on land access for their livelihoods; per capita water availability is failing and high water requirements for fracking will also conflict

## BOX C GRABBING DEMOCRACY, LAND AND WATER IN SOUTH AFRICA

With the lifting of the moratorium on fracking in South Africa in September 2012 after being in place for 18 months, the fracking threat may be about to materialize, without any significant consultation of the public or affected parties.<sup>46</sup> The green light to lift the moratorium was given based on the recommendation of a task team whose members include representatives of the Mineral Resources, Energy, Trade & Industry, Science & Technology, Economic Development governmental bodies, with no representation from either the Agriculture, Water, Environmental, Health or Tourism ministries. Permissions to begin exploratory operations have been granted by the Petroleum Agency of South Africa, which simultaneously has the role of promoting the oil and gas industry. The protocols associated with environmental impact assessments have been streamlined. In addition to the deficit in democratic decision-making that this case clearly exhibits, it also reveals an incredible degree of ecological recklessness. To illustrate, so far Dutch Shell holds a 9 million-hectare concession, US Falcon holds 3 million hectares, and the Australian company Bundu holds another 310,000ha. All of these holdings are located in the Karoo Region, a large mainly arid ecosystem that extends across a significant portion of South Africa. Here, access to water is a key constraint on human activity, and the use of water is a sensitive issue, both in social and economic, as well as ecological terms. Yet to operate the first 24 exploratory fracking wells alone will require an estimated 57 million gallons of water, and so far, the companies have failed to explain or reveal from where the vast amounts of water that will be needed to undertake fracking will be drawn.<sup>47</sup>

## BOX D **CHINA'S UNCONVENTIONAL REVOLUTION PROMPT WATER-GRABBING FEARS**

China is emerging as an Asian leader of unconventional shale gas production, describing it as “a ‘revolution’ to increase domestic gas supply, improve the energy mixture and protect energy security”.<sup>48</sup> According to its five-year shale gas development plan<sup>49</sup> and the white paper on energy development released 24 October 2012 by the State Council<sup>50</sup>, the government has set a target for the industry to pump 229 billion cubic feet of natural gas from underground shale formations a year by 2015; and by 2020, the nation’s goal is for shale gas to provide 6 percent of its energy needs.<sup>51</sup> Fracking has particular appeal for Chinese policy-makers, because of the size of the country’s gas reserves. A recent report by the Ministry of Land and Resources claims China holds the largest onshore shale gas reserves in the world, around 4,800 trillion cubic feet, lying mainly in the Sichuan and Tarim Basins in the southern and western regions of China.<sup>52</sup> This would, it is argued, free China’s growth from one of its main constraints – the reliance on imported energy.<sup>53</sup> The government is also determined to support the sector’s development, because it seemingly provides a way to reduce the national carbon footprint, as 70% of the nation’s consumed energy is currently supplied by burning coal.<sup>54</sup>

However, Chinese fracking ‘know-how’ is meagre. As a result, China has encouraged its companies CNPC, Sinopec and CNOOC to form partnerships with foreign oil companies. Chesapeake Energy, ExxonMobil, BP, Chevron, Total have embarked on multi-billion dollar deals, while Shell has announced a shale gas joint venture with CNPC to operate a 350,000ha concession in the Sichuan Basin.<sup>55</sup> China’s embrace of fracking may seem attractive on the surface, but its darker consequences are already becoming obvious. Handing over power to determine how land and water is used and how the environment is managed to fracking corporations and their quest for profit accumulation will undermine the Chinese peoples’ possibilities for democratic control of resources and their environment.

One issue in China perhaps highlights this more than any other, and that is the way fracking will exacerbate ‘water grabbing’. To achieve the target of 229 billion cubic feet of shale gas will require no less than 485 million cubic feet of water.<sup>56</sup> Yet, according to the same source, “most of the nation’s shale gas lies in areas plagued by water shortages”. A recent drilling test operation in Northern Shaanxi Province encountered complications, forcing local officials to temporarily cut a nearby city’s water supply. These risks are all the more threatening in a country that already faces major water conflicts.

## BOX E **POLAND'S CONVERGENCE OF GRABS**

In Europe, Poland is currently the country most actively involved in shale gas leasing and exploration, prioritised by the government in the name of energy security. Polish Prime Minister Donald Tusk has called unconventional gas the country’s “great chance” to reduce Poland’s high dependence on Russian gas.<sup>57</sup> As of April 2013, 109 licenses have been issued to oil and gas companies for shale gas exploration and production, mainly targeting three rich shale basins: the Baltic in the North, the Lublin in the South and the Podlasie in the East. Land grabbing has been massive; altogether, those concessions represent nearly 9 million hectares, almost a third of the whole Polish territory under the control of Chevron, Talisman, etc. Already, in January 2011, the Warsaw Appeals Prosecutor’s Office announced that seven people, including government officials, have been charged with corruption during the granting of licenses for shale gas exploration.<sup>58</sup> This illustrates the mechanics of a coalition of interests that lies behind many global examples of control grabbing.

Poland is also among the countries with the most obvious fracking-induced threat of water grabbing. First of all, companies do not pay for water, as it is included in the land concession even in areas that are exposed to water shortages as in the South. Second, Poland’s legal framework enables companies to buy the land for gas extraction even if the actual owner does not want to sell it. Shale gas extraction has been specifically included on the official government list that allows for dispossession of farmers or real estate owners.<sup>59</sup> Finally, during the year 2011, when most licenses for exploration were granted, no preliminary environmental assessment was required from the companies. Due to this, companies cannot be held accountable for the state in which they return any leased land. Explosives used during exploratory drillings have already caused water pollution, making it unfit for human consumption.<sup>60</sup>



with agricultural uses.<sup>61</sup> It is likely that India's enthusiasm for shale gas will drive a new wave of land and water enclosures. In the politically volatile South China Sea, **Vietnam** is involved in conducting offshore fracking, which has opened the doors to a flood of major players such as ExxonMobil, BP, Chevron and Total, since neither Vietnam (nor any of its neighbours) possesses the technology needed to actually extract gas from these depths. Meanwhile, regional powerhouse China has also launched its own projects in the same waters.<sup>62</sup> The race for position in the troubled waters off Southeast Asia increases the risk of corporations engaging in unmonitored activities there.

In Europe, **Poland**, with the largest reserves, is the main focus of the corporate rush (see box E on Poland). **Romania** is following the trend. Although the current Romanian government initially opposed shale gas when it took power in 2012, calling for a moratorium on extraction until European studies assessed the impact of fracking on the environment, it later reversed its policy in the name of potential economic benefits.<sup>63</sup> Following the recent lifting of the moratorium, Chevron – owning 800,000ha of concessions – announced that it was starting exploratory drilling in both the north and south of the country.<sup>64</sup> In **Ukraine**, shale gas reserves are definitely part of the government's future development plans, as a recent major deal signed with Shell indicates. The latter declared it was investing 10 billion dollars.<sup>65</sup> **Turkey** is also seeking to intensify the exploration and development of shale gas around the country and in the Black Sea<sup>66</sup>, where Shell said it would “pour a couple of millions of dollars”<sup>67</sup>, and the Canadian TransAtlantic Petroleum has been fracking several wells since 2012.<sup>68</sup> **Spain** allegedly has important deposits in the northern part of the territory, and has already granted several licenses for explorations. BNK Petroleum holds around 160,000 ha.<sup>69</sup> In the **UK**, the government is very keen to develop its shale gas and coalbed methane reserves, and has already granted a bevy of licenses. Many close observers of the UK case believe that the policy-making processes for assessing shale gas development have been hijacked by fracking industry insiders or other influential people related to their interests within the government.<sup>70 71</sup> Fracking there is causing serious environmental degradation (see Box C on UK). Finally, both **Hungary** and **Sweden** had allowed several exploratory wells, though due to disappointing first results, respectively Exxon Mobil and Shell chose not to renew their license.

**(III) Pre-fracking stage** refers to the group of countries that are just beginning to establish pre-fracking agreements or licenses.

A non-exhaustive review – due in part to the secrecy that often surrounds those deals – indicates that **Colombia** has joined the rush and surveyed basins, and plans to

increase its domestic natural gas production including from unconventional fields. The national oil company Ecopetrol is developing a joint venture with Exxon Mobil.<sup>72</sup> Meanwhile, **Malaysia** has signed exploratory agreements with Haliburton for its shale gas reserves<sup>73</sup>, while **Indonesia** is currently signing shale gas exploration contracts after having passed measures to attract new investors whilst encouraging existing contractors to accelerate production.<sup>74</sup> Given the national company Pertamina's lack of know-how, it has to rely on fracking industry experts. Indonesia dream of (energy) independence might turn sour as the country's energy future is left in the hands of partnerships with Chevron, Talisman, Dart Energy, ExxonMobil, BP and ENI.<sup>75</sup> Elsewhere, **Lithuania** has also just passed legislation purportedly regulating shale gas activities inside its borders, but mainly by opening the door to exploration in the very near future, with Chevron poised to start exploratory drillings any time.<sup>76</sup>

## 5. Who are the main actors involved in fracking today?

Behind the worldwide scramble for unconventional gas exploration and extraction is a web of public and private transnational, national and institutional actors and interests.

Leading the pack are **the global oil and gas corporations**, which can be divided into three categories. First, there are the **technology suppliers** such as Halliburton, Schlumberger, Haker Hughes, GasFrac Energy Services, Frac Tech services, etc. which own the technical know-how concerning the explosives, the fracfluid, etc. but do not necessarily engage in the fracking job itself. This operation is undertaken by **the drillers**, a myriad of gas companies whose leading players are global corporations such as Apache, Chesapeake, Chevron, Dart, Encana, Exxon Mobil, Schuepback, Talisman, Shell, etc. Through multi-billions dollars merging and acquisitions, the sector is undergoing rapid concentration. Even though the unconventional gas field involves big players or industry groups, each fracking site usually involves at least two or three companies, often mixing national or state-run ones with foreign players. Finally, French Total, Italian ENI and Spanish Repsol among others embody **the investors**, oil and gas companies involved in many countries mostly financing projects, in joint venture with drillers. It is worth noting that now fracking also attracts investors such as investment banks (see Box F on the fracking money) or corporate giants like the US General Electric.<sup>77</sup>

These corporate actors are bound to various degrees with **governments**. Besides the issuing of licenses and permits, governments are responsible for setting the energy policy direction that will support or not unconventional gas exploration and production (see Box G on regulation). The government as

a public sphere is, as ever, a contested arena where politics is played out differently according to each case. The government role varies from enthusiastic *enablers* of fracking (Australia, Argentina, China, Poland for instance), to *promoters* (the US) or governments who actually *oppose* development of fracking (Quebec, Bulgaria, Czech Republic or France). The latter are constantly under pressure from corporations or industry's lobbies to change their position, sometimes successfully.

At the global level, US are playing a crucial role in promoting unconventional gas exploitation. The Global Shale Gas Initiative, launched by the US Department of State in 2010, is actively making the case for worldwide legislation that favours fracking. In the same vein, the US Department of Energy issued in 2011 "World Shale Gas Resources: An Initial Assessment of 14 Regions Outside the United States", one of the most extensive publicly accessible gas shale profiles, mapping the state of the resource worldwide.<sup>78</sup> Furthermore, under the umbrella of international cooperation for development, the US is pressuring governments to open their door to unconventional gas exploitation. The US-Indonesia Energy Investment Roundtable (February 2012) for instance made

## THE FRACKING WEB



a strong case for fracking in Indonesia following technical and political advice from the US.<sup>79</sup>

Finally, and last but not least, is **the world of advisers**. Unsurprisingly, *industry's lobbies* are actively pushing reticent government to accept fracking. The South African government yielded in 2012 to strong industry pressure and the lure of potential profits to lift an existing 18 months long ban on fracking. Bulgaria also eased its ban in 2012. Although for the time being on the outs in France, they have not had their final

## BOX F THE FRACKING MONEY: THE FRACKER, THE GRABBER AND THE BANKER

One reason to doubt that the fracking industry will provide advantages to societies such as energy self-sufficiency, economic growth and environmental benefits can be found in the kind of big business interests backing the development of unconventional gas. Behind the fracking boom is at least partially the same 'restless' global capital that is operative in other kinds of large-scale capital-intensive projects involving the capture of land and water.

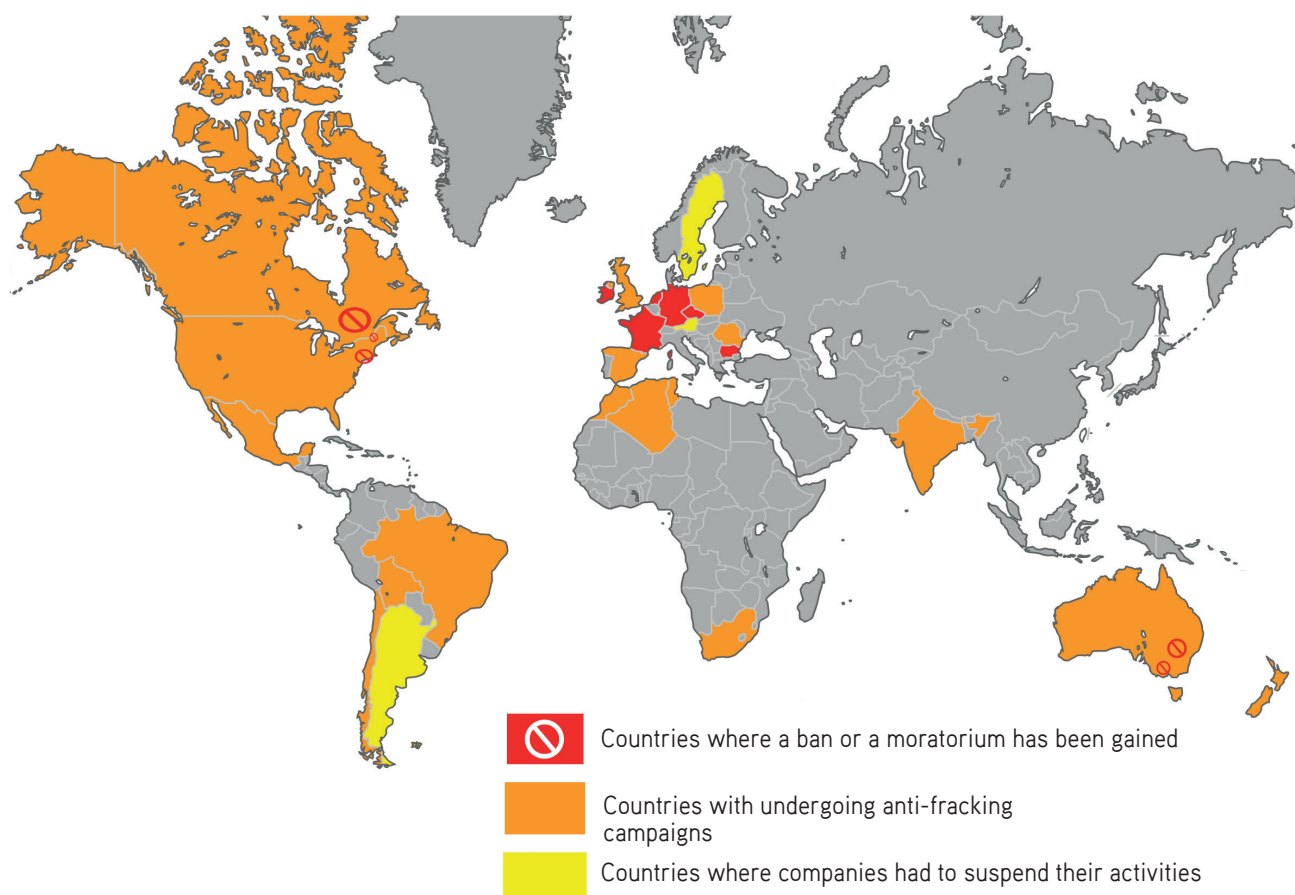
First, fracking projects are being undertaken by some of the same corporations that were already engaged in other kinds of land grabbing activities. For instance, the Italian energy company ENI, involved in several unconventional gas exploration worldwide, from North Africa (Tunisia, Algeria) to Asia (Indonesia, China), including Europe (Poland, Ukraine), has also been flagged as implicated in land grabbing elsewhere: a 170,000ha forestry project in Mozambique<sup>80</sup>, a 12,000ha in Angola and 70,000ha in Congo oil-palm projects.<sup>81</sup> The Argentinian YPF that seeks to frack in Argentina is also linked to a large-scale agricultural land deal in Colombia.<sup>82</sup> Bharat, an Indian group whose oil and gas arm holds shale gas exploration licenses in Australia, has other divisions with agricultural projects involved in grabbing land in Ethiopia.<sup>83</sup> Shell, one of the main players in the global fracking boom, was found to be investing in a biofuel plantation project in Brazil that is situated on land taken from an Indian tribe.<sup>84</sup>

Second, financial capital – 'Wall street economics' – is playing a noticeable role in spurring fracking-driven land grabs. Analysts and investments bankers on financial markets are major supporters of unconventional gas exploitation. Their participation in promoting the fracking frenzy has artificially created a speculative bubble on real and financial assets spawning massive profits and enclosing land. In 2011, mergers and acquisitions deals around shale gas operators accounted for 46.5 billion dollars on Wall Street, becoming one of the largest profit centers for some investment banks.<sup>85</sup> Those activities have been coupled with complex financial products, including 'bundling leases' of land. This has prompted "the land grab which shale gas operators engaged in by leasing millions of acres of land, drilling a handful of wells and pronouncing the field 'proved up' and thereby a 'safe' investment, and then flipping such parcels to the highest bidder."<sup>86</sup> The CEO of Chesapeake, one of the major US corporation conducting fracking, has stated that "I can assure you that buying leases for x and selling them for 5x or 10x is a lot more profitable than trying to produce gas at \$5 or \$6 mcf [million cubic feet]."<sup>87</sup>

say and the discussion is still open (see Box I on France). At the European level, the industry's advisers are engaged in an all-out campaign to prevent restrictive regulation.<sup>88</sup> In addition to natural gas producers' lobbies, parts of the *academic and scientific world* have also played a significant role in framing the unconventional gas agenda. For example, the US Department of Energy's influential report was prepared by the Advances Resources International Inc., an external group – but not independent from the industry's standpoint.<sup>89</sup> 'Frackademic' scandals with conflict of interests and opaque connections have been unfolded in both the US<sup>90</sup> and the UK<sup>91</sup>, thereby calling into question the so-called impartiality of academia towards fracking.

On the other side, anti-fracking community groups, local activists (referring to themselves as 'fracktivists') and *domestic and transnational civil society organisations* (CSOs), by their continued resistance appear to be on their way to becoming key actors themselves, but with the exact opposite aim of dismantling the pro-fracking web of interests. A recent "white paper", commissioned by the shale gas industry itself, acknowledges the sophistication, speed and influence of anti-fracking campaigns.<sup>92</sup> These campaigns are at the heart of a resistance movement "from below" that is steadily spreading across the globe.

## STATES OF RESISTANCE



## 6. Where is the resistance to fracking?

As fracking spreads across the world, grassroots resistance to it is also growing but widely dispersed. In an attempt to forge a more unified global resistance movement, last September 22, 2012 was declared the first Global Frackdown Day<sup>93</sup>, a project of the organisation Food and Water Watch. With more than 100 events that took place mainly in North America and Western Europe to protest against fracking, the day showed that citizens are awakening to the threat of this new dark 'golden age' of gas. Since then, both global campaigns and grassroots movements across the globe are increasing their struggle around 'fracktivism'. In addition to North America and Western Europe, Latin America, North Africa and Eastern Europe are now also emerging as sites of citizen resistance.

Following strong civil society pressure, some governments have agreed **to ban or impose a moratorium on fracking**. In **US**, campaigns succeeded in winning a ban in the states of Vermont and New Jersey; further, many towns and local authorities declared moratoria.<sup>94</sup> This resistance has a cost for corporations; leaving shell CEO stated in interview that his 'biggest regret' during his time at the company is their failure in exploiting US shale gas – a 24 billions dollars investment that has to pay off.<sup>95</sup> In Quebec (**Canada**), the provincial government issued in 2012 a full moratorium on shale gas fracking.<sup>96</sup> A bill to ban fracking for five more years was submitted in June 2013 to the Quebec

National Assembly. In **Australia**, the states of both Victoria and New South Wales also have moratoria in place. Although not banned officially, fracking is effectively under a moratorium in the **Czech Republic** due to the efforts and continued existence of a solid national anti-fracking coalition.<sup>97</sup> **Ireland** has recently decided on an informal two-year moratorium, to give time to develop new studies about the environmental and health impacts associated with these activities. In **Germany**, North-Rhine Westphalia has banned fracking, and a growing number of landers are taking a public stance against the development of shale gas, contributing to the abandonment of legislation that had been proposed by the Merkel government and supposedly aimed at better regulation of the fracking industry. Meanwhile, **France** has been the first country to vote in favour of a ban, although it remains to be seen whether the government will change its position (see Box I regarding the challenges behind the ban).

Indeed, nothing is set in stone, and current experiences suggest that a legal framework is not sufficient to prevent future U-turns in government policy (see Box G for more on various outcomes of regulation). Continued monitoring and mobilisation by citizens' groups is essential. In **Romania**, the government initially opposed shale gas when it took power in 2012, calling for a moratorium on extraction until European studies assessed the impact of fracking on the environment. Later it reversed its policy in name of potential economic benefits.<sup>98</sup> Companies are resuming the drilling amidst strong citizens' protests. The same story threatens to repeat in **Bulgaria**. In January 2012, after continuous protests by anti-fracking groups, the Bulgarian parliament imposed a ban on

the exploration of shale oil and gas in the country, in addition to withdrawing a license granted to Chevron Corporation.<sup>99</sup> Citizens' main concerns are that fracking will pollute the water and soil in the nation's most fertile farm region of Dobrudja.<sup>100</sup> Unfortunately, just five months later, the government has eased the ban and already plans to grant concessions to start production of gas in northern Bulgaria.<sup>101</sup> In **South Africa**, the government lifted in 2012 an 18 months-old ban (see Box C on South Africa). In **The Netherlands** the government almost U-turned from its moratorium, with pro-fracking statements<sup>102</sup>, but then recently extended the moratorium de facto for one more year after an intense public debate which saw wide opposition to shale gas, including banks<sup>103</sup>, brewers<sup>104</sup>, and the water sector.<sup>105</sup>

But **citizens' campaigns are still underway and growing** in **United States**<sup>106</sup>, **Canada**<sup>107</sup>, **New Zealand**<sup>108</sup>, **Australia**<sup>109</sup>, **Morocco**, **Algeria** and **Tunisia**<sup>110</sup>, **South Africa**<sup>111</sup>, **Spain**<sup>112</sup>, **UK**<sup>113</sup>, **Romania**<sup>114</sup>, and **Poland**<sup>115</sup>. The shale gas industry-commissioned white paper itself notes the emergence of anti-fracking movements in **Brazil**, **Chile**, **Bolivia**, **Mexico** and **India** as well.<sup>116</sup> And in several countries, **popular pressure has led companies involved to withdraw**. Recently, **Argentina's** state-run YPF suspended its fracking project following a court order based on a demand presented by citizens.<sup>117</sup> In **Sweden**, Shell encountered fierce opposition and resistance from local population over its first exploratory drillings, leading the company not to renew its license in 2011.<sup>118</sup> In **Austria**, massive resistance led by farmers among others succeeded in pressuring local officials to refuse granting fracking authorizations to the driller OMV.<sup>119</sup>

## BOX G FRACKING AND REGULATION, A DOUBLE-EDGED SWORD

There is no one-size-fits-all legal approach to roll-back unconventional gas development. The same legislative framework configuration can act as legal 'opener' or 'closer' depending on the case.

In some cases the absence of specific regulations on unconventional gas extraction, that is, where energy regulations include unconventional gas in their scope, is incentivising the industry. For instance, pro-fracking interests in New Zealand have been able to exploit gaps and ambiguities in the existing regulatory framework, in part by playing on the unequal political power and technical capacity of national and regional authorities.<sup>120</sup> The latter are often ill-equipped and easily overpowered in discussions with corporations, who in turn may bring the political weight of the national government to bear if needed. By contrast, in Spain, where the regional government of Cantabria already voted for a ban on fracking<sup>121</sup>, the national government is reportedly planning a new energy law that would allow fracking nationwide, and thereby overrule the ban in Cantabria, possibly provoking a political showdown.<sup>122</sup> But legislating specific regulations at national level can also prove to be an efficient legal 'closer', since having to comply with serious environmental legislation could entail economic costs that fracking companies find so prohibitive that they abandon their projects, as reportedly happened in Austria, for example.<sup>123</sup>

Yet efforts to put in place specific regulation for unconventional gas can also open the door to fracking. Corporations may seek clearer regulations in order to secure their investments and make sure their projects cannot be rolled-back. In Chevron's own words, "the strongest possible protection" from government is necessary, in order to "mitigate the risks associated with large-scale, capital intensive, and long terms projects [...] such as developing shale gas".<sup>124</sup> Countries like Colombia, Argentina, Indonesia or Lithuania are all currently working on creating an enabling economic environment for the fracking industry, including legislative protections and fiscal incentives. This is on top of provisions under general international trade and investments treaties that also favour the fracking industry over binding government regulation; the mere threat of legal action against them by corporations can have a chilling effect when policy-makers realise they will have to pay to prevent fracking (see also Box H).

## BOX H **LONE PINE VERSUS QUÉBEC: RIGHT TO PROFIT OVER RIGHT TO SAY NO**

Investment protection chapters of free trade agreement allow investors to challenge moratoria and bans through an investor-state-dispute-settlement mechanism (ISDS). Under trade and investments agreements, this arbitration mechanism allows an investor to settle the dispute with a State outside the regular court system, typically via ad hoc tribunals; the arbitrators overseeing these cases have an intrinsic interest to rule in the benefit of the only party which can bring cases – the corporations. ISDS enables energy and extractives companies to challenge fracking bans, moratoria and environmental standards, basing their prerogative on the ‘indirect expropriation’ and ‘fair and equitable treatment’ clauses that are often part of free trade treaties, and in addition, incredibly, to claim compensation as a result of any regulation that may reduce investors’ expected future profits.

When the provincial government of Quebec decided in 2010 to extend its moratorium to all exploration and development of shale gas in the entire province, a US-owned energy firm, Lone Pine Resources Inc., decided to use the investor rights chapter in the NAFTA to challenge the moratorium, by demanding 250 millions dollars in compensation. Lone Pine claims the Quebec moratorium is an “arbitrary, capricious, and illegal revocation of [its] valuable right to mine for oil and gas.” Besides claiming it has a ‘right’ to mine, the firm says “there is no valid public purpose to the moratorium”<sup>125</sup>, even though there is broad public support for a precautionary moratorium while the environmental impacts of fracking are studied. Milos Barutciski, a lawyer of the law firm Bennett Jones LLP who is representing Lone Pine in the arbitration proceedings, described the moratorium as a “capricious administrative action that was done for purely political reasons – exactly what the NAFTA rights are supposed to be protecting investors against.”<sup>126</sup> It remains to be seen whether Lone Pine’s purported ‘right’ to make a profit under NAFTA will end up trumping the democratic right of communities to say no to destructive and environmentally dangerous projects.

## BOX I **BEHIND THE FRENCH BAN, SUCCESSES AND CHALLENGES**

Only the strongest of citizens’ campaigning has succeeded in blocking fracking. The French campaign that led to the first ban in Europe started in late 2010.<sup>127</sup> Following the discovery in March 2010 that the government without any public consultation had delivered permits for fracking on three sites, and with news of 64 other licenses pending, local citizens formed groups in affected areas. This quickly led to the mushrooming of informal spontaneous and uncoordinated town-hall meetings in villages gathering unprecedented numbers of people. In early 2011, a massive citizens’ movement began to form, with a landmark public demonstration in February that year, bringing together strong local networks that succeeded in compelling local authorities to take an anti-fracking stance. The national government, unprepared for such an uproar was caught off-guard; initially it issued a moratorium, but after further pressure a law banning fracking was approved by Parliament in July 2011.

Two factors have been decisive in ensuring this success according to activists involved.<sup>128</sup> First, the anti-fracking movement effectively combined spontaneous and passionate local protests with challenges at a national level on legal grounds pinpointing irregularities based on French land and water legislation. Second, the movement benefited from a strong sense of locality and place in rural areas which framed the campaign in terms of democracy and sovereignty over land.

Industry has not surrendered however. Instead, companies have started to exploit loopholes in the law – for example, asking for permits for “stimulating bedrock” that exploit the fact that the law does not properly define fracking. They have also invested in a far-reaching public relations campaign that promotes fracking with the language of energy independence and job opportunities. In June 2013, the US fracking company Schuepbach Energy asked the Constitutional Council to invalidate the 2011 law as non-constitutional.<sup>129</sup> In a major victory for the French anti-fracking movement, the Constitutional Council recently rejected its arguments that the ban “violated its rights, unfairly singled out fracking and was unconstitutional”, to rule against Schuepbach.<sup>130</sup>

In the meantime, however, rogue frack jobs are reportedly being uncovered<sup>131</sup> and the French gas giant Total is still trying to get administrative courts to invalidate the revocation of its exploitation licenses. This suggests that the struggle against fracking in France is far from over, and that citizens who oppose fracking will have to find ways to monitor and ensure that the ban is actually implemented on the ground.

### Resources

Frackaction: <http://www.frackaction.com/>

Propublica.org: <http://www.propublica.org/series/fracking>

Food and Water Watch: <http://documents.foodandwaterwatch.org/water/fracking/>

Council of Canadians: <http://canadians.org/water/issues/fracking/index.html>

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## AGRARIAN JUSTICE PROGRAMME

In recent years, various actors, from big foreign and domestic corporate business and finance to governments, have initiated a large-scale worldwide enclosure of agricultural lands, mostly in the Global South but also elsewhere. This is done for large-scale industrial and industrial agriculture ventures and often packaged as large-scale investment for rural development. But rather than being investment that is going to benefit the majority of rural people, especially the poorest and most vulnerable, this process constitutes a new wave of land and water 'grabbing'. It is a global phenomenon whereby the access, use and right to land and other closely associated natural resources is being taken over - on a large-scale and/or by large-scale capital - resulting in a cascade of negative impacts on rural livelihoods and ecologies, human rights, and local food security.

In this context TNI aims to contribute to strengthening the campaigns by agrarian social movements in order to make them more effective in resisting land and water grabbing; and in developing and advancing alternatives such as land/food/water sovereignty and agro-ecological farming systems.

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For more information contact:  
[tni@tni.org](mailto:tni@tni.org)