

# Control Risks



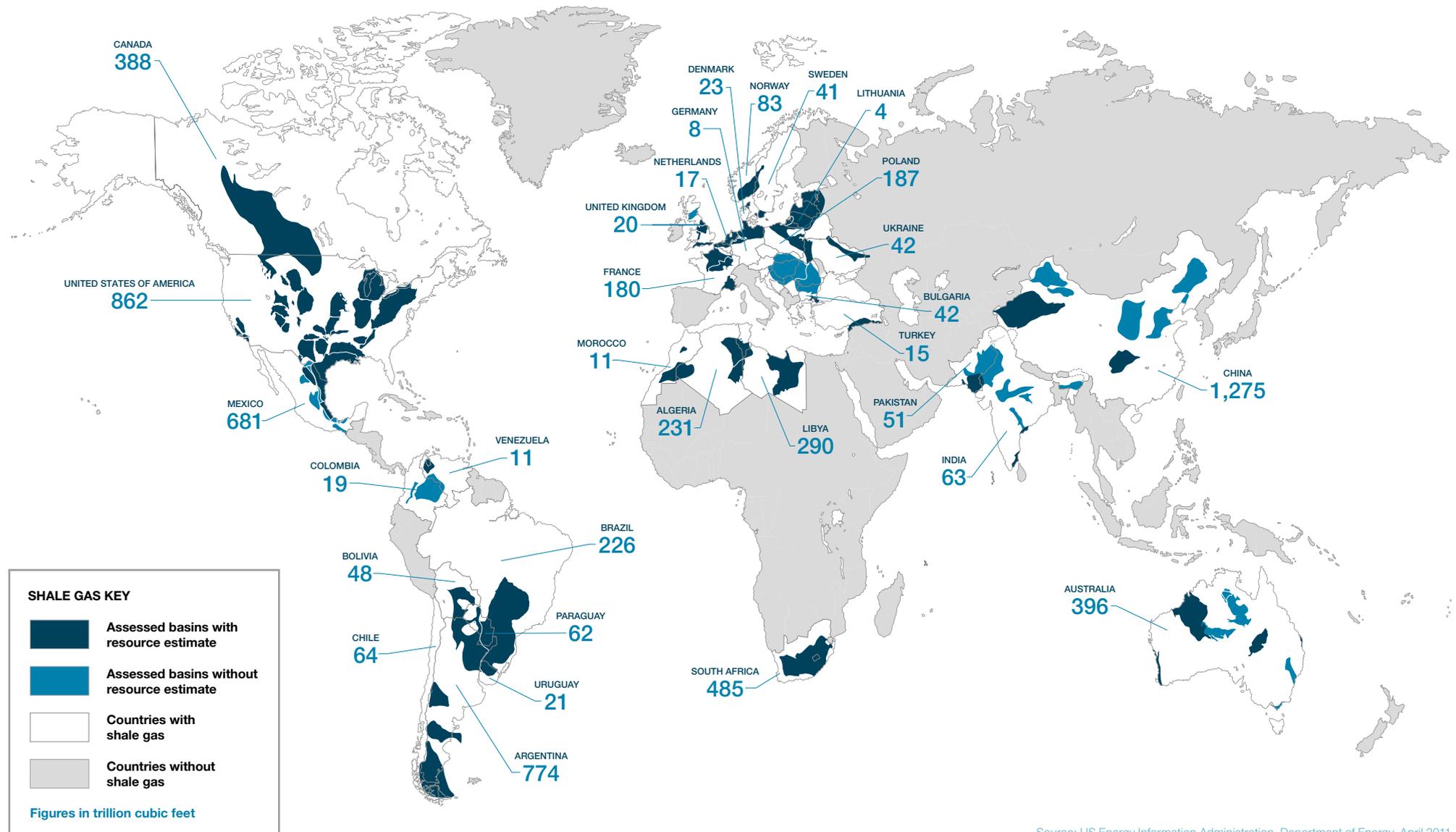
THE GLOBAL ANTI-FRACKING MOVEMENT  
WHAT IT WANTS, HOW IT OPERATES AND WHAT'S NEXT



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# ESTIMATED RECOVERABLE SHALE GAS RESERVES



# THE GLOBAL ANTI-FRACKING MOVEMENT

## WHAT IT WANTS, HOW IT OPERATES AND WHAT'S NEXT

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### INTRODUCTION

Unconventional natural gas is often described as game-changing and transformative, a revolution heralding a golden age of cheap, plentiful energy for a resource-constrained world.

But only if it makes it out of the ground.

As shown by local bans in the US and Canada, national moratoriums in France and Bulgaria, and tighter regulation in Australia and the UK, the global anti-fracking movement has mounted an effective campaign against the extraction of unconventional gas through hydraulic fracturing ('fracking'). Meanwhile, the oil and gas industry has largely failed to appreciate social and political risks, and has repeatedly been caught off guard by the sophistication, speed and influence of anti-fracking activists.

As unconventional gas development spreads worldwide, and becomes more central to government energy policy and corporate investment strategy, a better understanding of the anti-fracking movement – its goals, structure, methods and trajectory – is essential for companies, policymakers and other observers of the emergent energy boom.

## GASLAND GOES GLOBAL

The anti-fracking movement did not start with Gasland, but would not have gone global without it. Armed with a vivid strapline – ‘Can you light your water on fire?’ – the 2010 US documentary crystallised environmental concerns about hydraulic fracturing. More importantly, it provided a shared point of reference for anti-fracking groups worldwide, serving as a ready introduction to the issues and perspectives of the anti-fracking movement.

In southern France, for example, anti-fracking *collectifs* routinely launched with a screening of Gasland, which was released in French cinemas two months before a national moratorium was adopted in mid-2011. Meanwhile, the first Bulgarian-language subtitles appeared in mid-2011 on video-sharing websites, prefacing the emergence of widespread anti-fracking protests. South African anti-fracking groups screened Gasland in Cape Town shortly after the first exploration applications for the Karoo

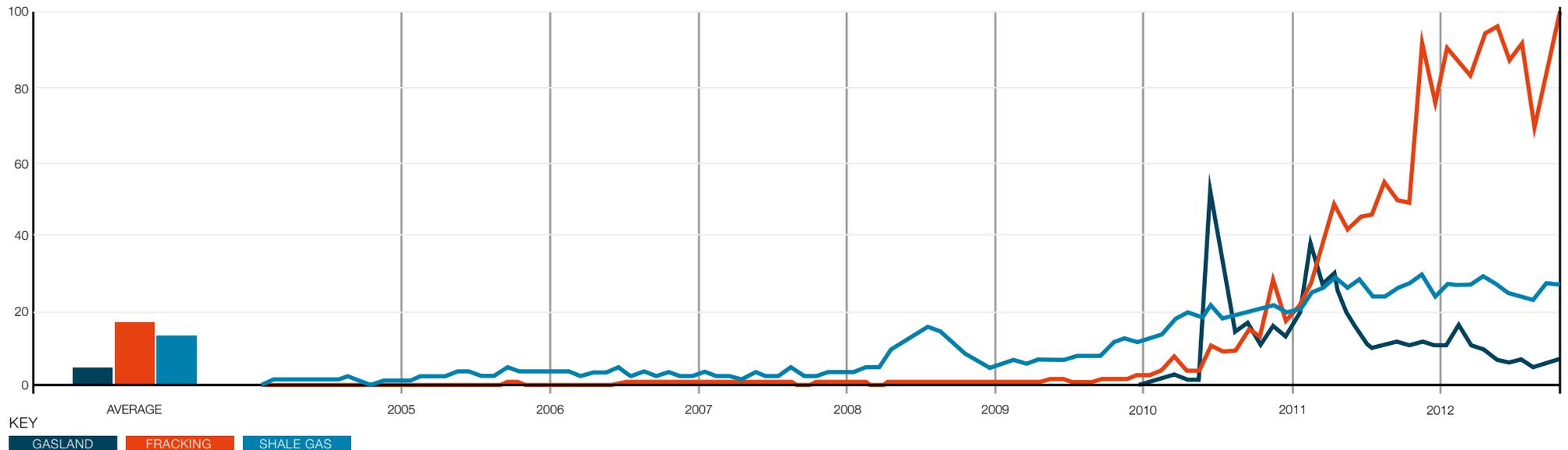
basin were submitted. Even in the US, where environmental groups have opposed hydraulic fracturing since the late 1990s, Gasland brought anti-fracking sentiment to the masses. Indeed, according to Google’s analytics, searches for Gasland tend to precede rising search activity for ‘fracking’.

Almost single-handedly, Gasland made unconventional gas production internationally controversial. The film’s climactic scenes of rural homeowners using matches to set tap water alight have been replicated repeatedly, in multiple languages, in both mainstream and social media. Anti-fracking movements worldwide centre on water contamination concerns and related threats to public health, agriculture and ecology, citing Gasland as evidence. Tighter regulation has revolved around Gasland’s major concern of disclosing fracturing chemicals, as well as managing surface wastewater and reducing greenhouse gas emissions. Moratoriums are predicated on the need to better understand the environmental impacts of hydraulic fracturing, while bans assert unequivocally that hydraulic fracturing is an untenable environmental

risk. In short, Gasland is the lens through which the global anti-fracking movement views the US experience with hydraulic fracturing.

The industry argues that environmental concerns are misplaced and based on misperceptions fuelled by Gasland. Yet simply attempting to discredit Gasland has been ineffective for a few key reasons. First, anti-fracking grievances are broader and deeper than water contamination. They also encompass health and safety concerns, and issues of economic development, cultural integrity and political legitimacy, which pertain directly to the question of who wins and who loses from gas development. Secondly – and crucially – companies have lost public trust by discounting the legitimacy of grievances, prioritising trade secrets over transparency and engaging governments rather than communities. Finally, the industry has underestimated the sophistication, reach and influence of the anti-fracking movement. It is not simply ‘NIMBY-ism’ masquerading as environmentalism, but a diverse coalition of ideological and vested interests unlikely to be swayed by industry-funded studies or glossy public relations campaigns.

Google search term volume (100 represents peak search volume)



Source: Google Trends, October 2012

## DIFFERENCES BETWEEN SHALE AND COAL GAS DEVELOPMENT

Hydraulic fracturing is used to extract natural gas from both shale rock and coal deposits. Environmental concerns about hydraulic fracturing originated with its use to extract gas from coal in the US in the 1990s, before the process was widely used to extract gas from shales. But there are important differences between production methods for shale gas and coal bed methane (CBM, known as coal seam gas – or CSG – in Australia).

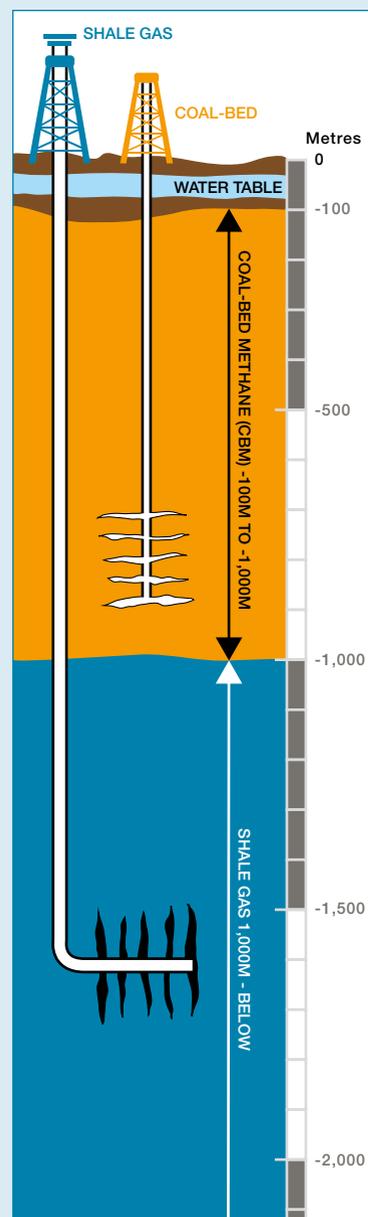
First, shale strata (at 1,000m to 3,000m) are typically much deeper than coal deposits (100m to 1,000m). This reduces the likelihood that gas, fracking fluids and produced water could migrate from the shale formation to contaminate the water table.

Secondly, coal deposits are much more porous than shale rock. Nearly all shales require hydraulic fracturing to extract gas, whereas only a portion of coal deposits require fracturing. In Queensland (Australia), for example, only 10%-40% of CBM wells are estimated to ultimately require fracturing.

Thirdly, shale is much denser than coal, requiring greater energy to fracture (25,000-35,000 horsepower, compared with 4,000-5,000 horsepower to fracture coal seams). Therefore, more and more powerful equipment is required to fracture shales than to fracture coal deposits.

Finally, water must generally be pumped out of coal deposits to extract natural gas, while it must be pumped into shale to fracture the deposit and extract natural gas. Therefore, coal gas projects potentially put less immediate strain on surface water resources. However, they also have greater subsurface water risks insofar as water from adjacent aquifers could migrate into coal formations as reservoir pressures decline. For both coal and shale gas wells, water produced from the well (also known as 'produced water') is saline and toxic in high concentrations, requiring similar types of handling, treatment and disposal.

The internationalisation of the anti-shale and anti-coal seam gas activist movements in defence of 'the world's underground water supplies' was an important development in 2012. On a declared 'World Day Against Fracking/CSG' in July, for example, a key activist group opposing Australian coal gas development spoke at a major national anti-fracking rally in Washington, DC, situating itself explicitly within the international anti-fracking movement.



## WHAT THE ANTI-FRACKING MOVEMENT WANTS

The specific agendas of anti-fracking groups vary according to local priorities and group composition. Public consultation is critical in France, for example, while rural conservation issues dominate in Australia. However, the movement as a whole falls into four broad camps: those desiring a better deal from the gas industry; those advocating further study into the environmental and economic impacts of unconventional gas development; those demanding a complete ban on hydraulic fracturing; and – in the majority – those demanding tighter regulation of gas development.

### A better deal

Parts of the anti-fracking movement are not opposed to hydraulic fracturing per se, but want to extract a better deal from the industry in terms of economic opportunity, taxation, and compensation.

The anti-fracking movement tends to sharply discount rosy industry projections of economic growth and employment. From Pennsylvania to Poland, activists are concerned that labour will be imported and profits exported, leaving local communities to bear the long-term environmental and public health costs of the industry. In France, Bulgaria and Czech Republic, this sentiment has manifested as specific opposition to foreign involvement in the industry, on top of general opposition to hydraulic fracturing. In the US, it takes the form of sectional opposition to energy companies from Texas and Oklahoma dominating the industry in Pennsylvania and New York. In South Africa, anti-fracking activists wonder how uneducated, unskilled local labour forces are supposed to benefit from hydraulic fracturing. Where they do not constitute an argument for completely prohibiting unconventional gas development, such concerns will continue to drive demands for increased local content and raise risks to foreign investors.

Transferred into politics, the anti-fracking movement's discourse on a better deal revolves around the tax structure of the unconventional gas industry. At one level, this reflects animosity towards the incentives and exemptions often provided to attract investment. The anti-fracking movement in Pennsylvania, for example, has questioned the state's low taxes on unconventional gas development, calling for

both a severance tax (i.e. based on volumes extracted) and royalty rates in line with those in other parts of the country. At another, it reflects a desire for increased taxes to compensate for the social costs of unconventional gas development. Local impact fees in parts of the US, for example, are envisioned as being a way for municipalities to recoup the costs of maintaining public roads degraded by truck traffic or funding emergency response capacities. The tax structure is also perceived as a bulwark against unconventional gas development full stop, as opposition to tax exemptions for liquefied natural gas (LNG) exporters and support for carbon taxation suggest.

Finally, the anti-fracking movement frequently overlaps with direct compensation claims by individuals or communities against companies, seeing itself as a counterweight to the energy industry's political clout and legal armour. Prominent US anti-fracking groups, for example, took a special interest in water contamination lawsuits in Dimock (Pennsylvania) – settled in late 2012 – which achieved global symbolic status because they featured in Gasland. One of the plaintiffs in the Dimock case, conversely, was a prominent anti-fracking activist, occasionally appearing at demonstrations alongside Gasland director Joshua Fox.

[Gasland director Joshua Fox speaks during a news conference on the steps of City Hall in New York, December 2011](#)



In similar cases in the US, environmental groups such as EarthJustice and the Delaware Riverkeeper Network have involved themselves in litigation against gas companies, filing briefs in support of residents seeking compensation. In these cases, getting a better deal from the gas industry concretely implies maximising direct settlement compensation. Yet, as in the Dimock case, settlement – rather than conceding the debate and fuelling anti-fracking sentiment – may be the least costly course of action.

#### Further study

The anti-fracking movement points to lingering knowledge gaps about the impact of unconventional gas development – particularly on public health – as justification for a precautionary policy and regulatory stance. It naturally seizes on credible analyses of water contamination, seismic activity or other issues as critical evidence supporting the need for further research. Two 2011 reports in particular function as key texts in this regard: a US Environmental Protection Agency (EPA) finding of water contamination from a well in Pavillion (Wyoming); and the UK Department of Environment and Climate Change (DECC)'s determination that hydraulic fracturing induced minor earthquakes near Blackpool (Lancashire).

Further study is always possible. Both the EPA and DECC studies were inconclusive on some points – a simple fact of scientific investigation – and even greater uncertainty surrounds the impact of unconventional gas development on the economy or climate change. The anti-fracking movement routinely rejects, for example, analyses of the economic and employment benefits of unconventional gas development as based on unrealistic assumptions. And the International Energy Agency (IEA) notes that the greenhouse gas impacts of fugitive methane emissions from unconventional gas development – and consequently the 'green' credentials of unconventional gas – vary wildly depending on the study.

Another problem for the industry is that the anti-fracking movement is sceptical of studies sponsored by or linked – however tenuously – to the gas industry, which is a key source of funding and research into hydraulic fracturing. Several recent university studies in the US, for example, were compromised by undisclosed conflicts of interest

between researchers and gas companies. This only underscores the challenge of meeting demands for further research. Research is expensive and time-consuming; without a significant injection of public funding – the US Congress in June 2012 rejected a \$4m administration proposal to study water quality impacts – significant knowledge gaps seem likely to remain.

#### Moratoriums and bans

Calls for further study often go hand-in-hand with temporary moratoriums on unconventional gas development, and companies rightly monitor gas studies as a proxy for political risks to the unconventional gas industry. Pushing for a moratorium – whether to accommodate impact studies, mediate emergent political disputes or develop regulatory frameworks, as in several Australian and US states, Canada, South Africa and Czech Republic – can be part of a strategy for halting unconventional gas development while buying time to build political will against the industry.

In France, for example, initial calls for a *gel* (freeze) on gas development to study impacts morphed into calls for a permanent ban as the movement gathered pace during a six-month moratorium. Similarly, activists in Bulgaria have called for a legal ban to follow on from the current moratorium, as have German anti-fracking activists in North Rhine-Westphalia. In Australia, documents leaked in March 2012 and attributed to environmental groups imply a strategy of using litigation and grassroots mobilisation to delay and disrupt CSG projects until political conditions are ripe for legislation banning hydraulic fracturing. In Canada, meanwhile, Quebec's new separatist government in September 2012 moved quickly to extend a partial moratorium to study impacts into a comprehensive ban.

Outright bans constitute the most significant political risk to the industry, as licence cancellations in France attest. The push for a complete ban on hydraulic fracturing stems largely from three environmental arguments. First, the risk of water contamination from hydraulic fracturing fluids, gas migration and surface wastewater is simply too great. Secondly, methane emissions from wells and pipelines specifically, and increased fossil fuel consumption generally, threaten to accelerate climate change, as the IEA acknowledged in its 2012 report on the 'golden rules for

unconventional gas development. Thirdly, with Gasland's images of extensive networks of well pads in the western US firmly in mind, intensive development will fragment sensitive ecologies. Unsurprisingly, major environmental and conservation NGOs such as Greenpeace, World Wildlife Fund (WWF), Friends of the Earth and Sierra Club have been among the most vocal proponents of bans on unconventional gas extraction. As public health concerns gain wider traction in the movement, they seem very likely to also surface as primary justifications for moratoriums and bans.

Outside France, the anti-fracking movement has achieved its greatest successes in banning hydraulic fracturing at the local level. For example, in the US state of New York alone, more than 100 communities (most outside the area likely to be authorised for unconventional gas production) have introduced a ban. Numerous municipalities in other states across the adjoining Marcellus and Utica shale regions – as well as in more amenable Texas – have also instituted local bans, as have local governments in Australia, Ireland, Spain, Switzerland and New Zealand. Local bans reflect the strategy of the anti-fracking movement, as well as its limitations. Although influential at setting the national regulatory agenda, it often cannot simply override potent energy security, economic and political incentives for developing unconventional gas reserves.

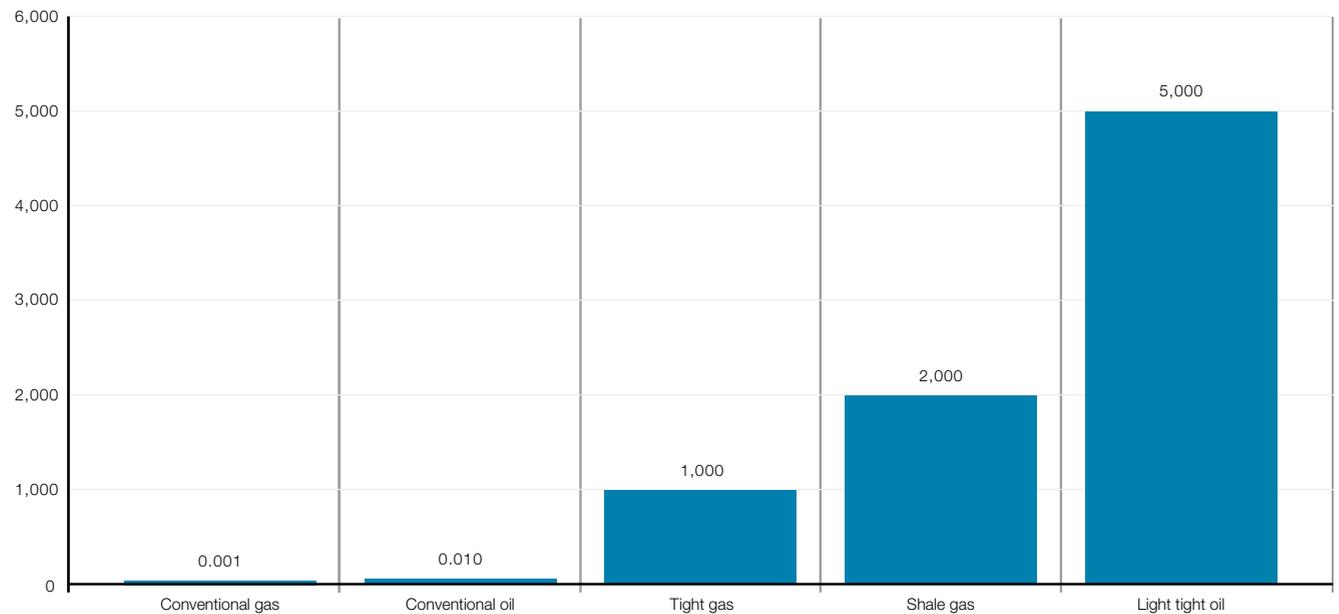
### Tighter regulation

Although moratoriums and bans capture most public attention, the majority of the anti-fracking movement simply wants tighter environmental regulation of unconventional gas development. With tighter regulation, enforcement and accountability, a sizeable swathe of the anti-fracking movement – from grassroots activists with single-issue grievances to influential environmental NGOs such as the US's Natural Resources Defense Council (NRDC) – is prepared to drop its objection to hydraulic fracturing. In its report on 'golden rules', the IEA provides a useful summary of the key issues. These include mandatory disclosure of fracturing chemicals and volumes; restrictions on well placement; compliance with well and pipeline construction criteria; responsible water use, and wastewater storage, transport and disposal; and reduction of methane and CO<sub>2</sub> emissions.

The anti-fracking movement is active on each of these fronts, but has made the most progress on requiring disclosure of fracturing chemicals, a key focus of Gasland and the first issue around which the movement coalesced. For example, in the US since 2010 legislation has been introduced at both state and federal levels to compel disclosure, the administration of Barack Obama has mandated disclosure for drilling on federal lands, and – citing a need to better engage stakeholders – the industry has embraced voluntary disclosure (including through the online, searchable registry FracFocus). Even with these victories, the US anti-fracking movement continues to push for an end to trade secrets exemptions embedded in many state laws, as well as a comprehensive federal disclosure requirement, such as that contained in the FRAC Act, a disclosure bill introduced in each of the last two Congresses. However, with analogous action in the UK, parts of Australia, and by companies in Poland and South Africa – let alone the IEA's endorsement of mandatory disclosure – its war on disclosure is largely won.

Consequently, the focus of the movement has shifted to other areas of environmental regulation. Water usage and wastewater (or 'produced water') management is one of the more potent environmental concerns of the anti-fracking movement worldwide. In the run-up to France's national ban, for example, *collectifs* in Rhône-Alps department argued that the millions of gallons of water required for hydraulic fracturing would place stress on scarce local water supplies, while the national branch of European anti-austerity campaign ATTAC highlighted the risk of surface contamination from toxic wastewater. Water usage is also a critical issue in South Africa's arid Karoo region, where activists are particularly sensitive to the potential impacts of the withdrawal, storage and transport of large water volumes in the wake of water pollution from mining elsewhere in the country. Even in the western US, the birthplace of intensive hydraulic fracturing, a record drought is raising tensions between gas companies and farmers over water pricing and access.

Primary recovery water usage (cubic metres per terajoule)



Source: International Energy Agency, 2012

Meanwhile, calls to regulate well placement and construction reflect an array of environmental, health and safety, and cultural concerns. However small the actual drilling footprint becomes – an area where the industry has made considerable progress in recent years through directional drilling and multi-well pads – the anti-fracking movement will continue to insist on exclusion from sensitive ecologies, critical watersheds, historic locations and densely populated areas. In the US, for example, simmering controversy over drilling beneath cemeteries in Texas, protests against wells in state parks in Pennsylvania and the use of historic preservation designations to restrict gas development in New York highlight the push to precisely regulate both well pad and well bore placement. Every blowout, gas leak or other containment failure strengthens arguments for increasing regulation – if not completely excluding drilling – near schools, hospitals and other sensitive structures.

#### Local regulation as anti-fracking strategy

In general, establishing increased local control of the unconventional gas industry through the use of local regulation or property rights is a growing trend. This is partly a reaction against the remoteness of provincial or national policymakers from ground-level impacts, and partly a reflection of the parochial interests of anti-fracking activists. For seasoned campaigners, local regulatory apparatuses are often more malleable and expedient than ponderous and highly competitive provincial or national bureaucracies.

In the US, France, Bulgaria, Czech Republic, South Africa and elsewhere, municipal authority is at the heart of anti-fracking movements. Communities throughout the US's Marcellus shale region, for example, have implemented local ordinances regulating aspects of drilling activity from truck traffic to noise levels, invoking authorities only recently granted by court decisions. In two bellwether cases in New York, for example, state courts upheld local bans against industry lawsuits, setting a precedent that may be enshrined in the state's energy policy in late 2012. Meanwhile, in Pennsylvania, a 2009 state Supreme Court decision gave primacy to local ordinances in terms of energy regulation, which has manifested as complex local (sometimes per well) variations in regulations and fees. In Australia, Green Party politicians have sought to replicate this result, introducing legislation in mid-2011

that would override arbitrated consent and permit farmers to block CSG exploration outright. Meanwhile, in Poland, communities have banded together to use private property rights, consent requirements and formal petitions to deflect exploratory drilling, in one case suing a geophysical services company for allegedly forging consent documentation.

#### The anti-fracking movement's emphasis on enforcement

Tightening regulation is one thing, but enforcing it raises a second layer of concerns for the anti-fracking movement. From Pennsylvania to Lancashire to New South Wales, the anti-fracking movement argues that regulators lack capacity, in terms of funding and inspectors, to oversee intensive unconventional gas development. Pennsylvania's Department of Environmental Protection has attracted some of the movement's most withering criticism, particularly after it emerged in 2011 that the agency spent as little as 30 minutes reviewing well permit applications, approving over 99% of them. Pennsylvania regulators were also criticised for authorising water treatment plants to process produced water, despite concerns that the plants were not equipped for the task. In neighbouring New York, environmental groups have highlighted a sharp decline in the number of well inspections after 2002, even as the number of wells being drilled correspondingly surged.

In addition to capacity constraints, the anti-fracking movement decries what it perceives as cosy relations between regulators and industry. Such concerns understandably multiplied after regulatory failures were implicated in the 2010 Gulf of Mexico well blowout and oil spill. South Africa's Treasure the Karoo Action Group (TKAG), a campaign advocating a ban on hydraulic fracturing in the Karoo basin, rejected out of hand a proposal that exploration companies fund an independent monitor to close capacity gaps at national regulator the Petroleum Agency of South Africa (PASA). Meanwhile, in New York state, anti-fracking activists have repeatedly availed themselves of the opportunity to demonstrate simultaneously against the state environmental regulator and industry lobby groups, situated in adjacent office buildings in the state capital Albany, particularly in the wake of a 2008 law regulating well spacing according to industry demands.

Tighter regulation is a foregone conclusion in most current and prospective unconventional gas-producing areas, indicating a strategic victory for the anti-fracking movement. Moreover, the movement has situated itself at the forefront of shaping emerging regulatory frameworks, both through grassroots participation (especially via public commentary periods) and high-level political influence (especially by mainstream environmental NGOs). In certain cases, as in Germany, tighter regulation may make unconventional gas extraction commercially unviable without significantly shifting entrenched anti-fracking opposition. Yet in others, it will underwrite public tolerance – if not embrace – of hydraulic fracturing.

## HOW THE ANTI-FRACKING MOVEMENT OPERATES

The anti-fracking movement prevailed on tighter regulation by building a highly effective advocacy campaign based on four points: grassroots mobilisation, online and social media, direct action, and networking.

### Grassroots

Mobilisation of grassroots opposition has been fundamental to the global anti-fracking movement. Much of this opposition to hydraulic fracturing emerged and spread organically, stimulated by messaging such as Gasland, rising media coverage of the industry and the physical advent or expansion of drilling activity. This is reflected in the hundreds of community-based anti-fracking groups that have emerged in the US, France, Australia, the UK, Ireland, South Africa, Canada, Bulgaria, Germany and elsewhere in the last few years, many of which initially had few if any ties to environmental groups. France's *collectif* movement, for example, spread largely organically through areas earmarked for unconventional gas development, and included more than 260 groups nationwide by May 2012. Similarly, scores of rural community groups – some tied to established farm bureau organisations, others consisting of just a handful of resident activists – comprised upstate New York's anti-fracking movement. For policymakers and the media, grassroots activists lend legitimacy, credibility and authenticity to the anti-fracking movement.

Bulgarian anti-fracking protests ahead of moratorium, July 2011 to January 2012



Converting grassroots opposition into anti-fracking advocacy is the province of environmental and other pressure groups. In the UK, for example, Brighton (Sussex)-based Frack Off – an outgrowth of the climate change direct action movement – has focused heavily on mobilising property owners in Lancashire, persuading many to participate politically and in demonstrations against hydraulic fracturing. Analogously, Australia’s anti-CSG Lock the Gate movement – supported by the national branch of Friends of the Earth and currently co-ordinating more than 160 groups – revolves around enlisting rural landowners in Queensland and New South Wales to refuse land access to gas companies: literally ‘locking the farm gate’. (Intriguingly, the anti-fracking movement has helped to overcome the historic antagonism between farmers and environmental groups in Australia.) In New York, the advocacy group Frack Action – staffed by veterans of various progressive campaigns – documents how grassroots mobilisation through petitions and awareness campaigns was instrumental in passing a local hydraulic fracturing ban in Albany. Pressure groups provide organisational infrastructure, information, technical assistance and political savvy to the anti-fracking movement.

Pressure groups are not the only organisations with an interest in harnessing grassroots anti-fracking activism: political parties – especially in Europe – also perceive potential dividends from instrumental alliances with the anti-fracking movement. In Bulgaria, for example, there is some evidence that Russia-aligned political parties backed anti-fracking protests in 2011, exploiting the opportunity to establish populist credentials and chastise the government in the run-up to elections at the end of the year. Meanwhile, the subsequent moratorium was effected with a view towards the next election cycle in 2013.

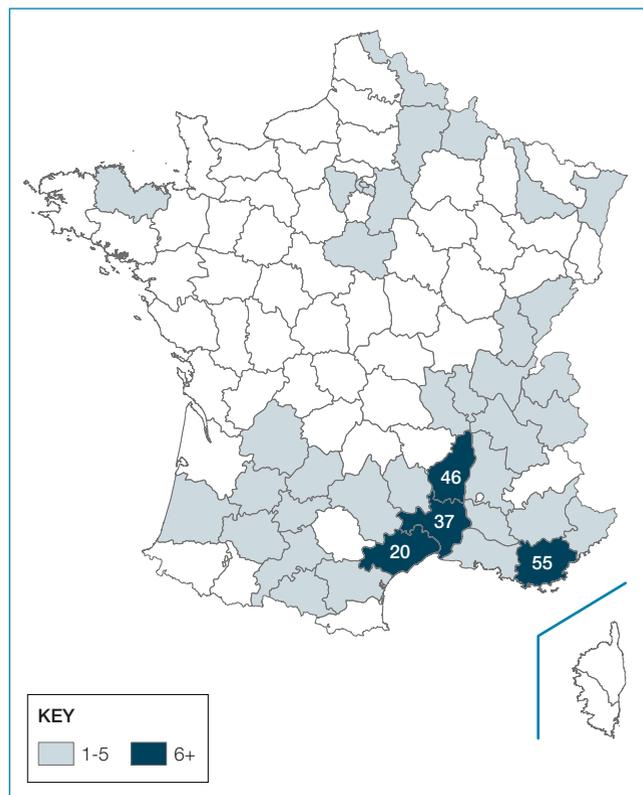
Similarly, the prominent participation of opposition political parties in France’s anti-fracking demonstrations helped to force the hand of the ruling Union for a Popular Movement (UMP), which in March 2011 introduced legislation for a ban to neutralise a perceived political vulnerability. In both cases, grassroots mobilisation was effective at short-circuiting the policymaking process precisely because it factored into electoral competition. Polish opposition parties are also reportedly involved in training anti-fracking

activists. By contrast, these political tactics have been less successful in the US, where official political positioning is more localised and ambivalent.

### Online and social media

A notable feature of the anti-fracking movement – shared with other social movements such as Occupy – is the extensive use of online social media to disseminate information, organise, and mobilise. Many of the co-ordinating groups at the centre of various national anti-fracking movements originated as forum groups, petitions or blogs, professionalising over time as attention and resources flowed

Anti-fracking *collectifs* by department as of May 2012



Source: Pas de Gaz de Schistes Herault (Collectifs 34), May 2012

into the anti-fracking movement. The extensive use of free or low-cost online platforms – including Google Calendars, Google Maps, YouTube, Twitter and Facebook – has both facilitated grassroots participation and helped level the information playing field vis-à-vis the gas industry.

Anti-fracking websites are highly effective information and messaging platforms. The movement invests heavily in monitoring the unconventional gas industry and publicising industry information, in part to correct significant information asymmetries distorting the relationship between gas companies and local communities. The early days – 2006 to 2008, before there was a coherent anti-fracking movement – of the gas boom in the US’s Marcellus shale region, for example, are replete with stories of companies playing on general ignorance about the science, practice and economics of hydraulic fracturing to secure favourable lease terms. Anti-fracking websites also note in detail the locations and terms of awarded licences, and the status of legislative and judicial reviews, and assiduously record environmental, and health and safety incidents linked to hydraulic fracturing. Cantabria (Spain)-based anti-fracking group Fractura Hidraulica No is typical in this regard: its website is broken into sections for concession maps and applications, selected background information on hydraulic fracturing, active legislation and summaries of parliamentary activity, and extracts from scientific studies on the environmental and health impacts of unconventional gas development.

In the same vein, anti-fracking websites also typically function as repositories of information, storing or linking to an array of documents, from official maps of licence areas to government regulations to leaked corporate emails. They thereby increase the visibility and availability of critical documents, situate them within the anti-fracking movement’s ideological framework, and build a common global information base. To take one example, a relatively obscure 2009 report on the health impacts of oil and gas development in Dish (Texas) by the environmental NGO EarthWorks – disputed by Texas health officials – was widely circulated among anti-fracking websites in the US, as well as in France and Bulgaria.

More importantly, anti-fracking websites are active advocacy and propaganda organs, providing a steady stream of promotional press

releases, reactive analysis and links to anti-fracking material. As noted above, distribution of online copies or excerpts of Gasland via YouTube and other video-sharing websites has been a motivating factor for anti-fracking movements outside the US, often featuring among the first posts to nascent anti-fracking websites.

In line with the generic evolution of social movements, online and social media are also instrumental in organising and mobilising the anti-fracking movement. Local and national anti-fracking demonstrations, for example, are promoted heavily via Facebook pages and Twitter feeds, with websites providing ready-made templates for posters, T-shirts and banners. At the more sophisticated end of the spectrum, for example, the anti-shale Quebecois (Canada) campaign *Moratoire d’une génération* maintains a dedicated initiative – *Schiste 911* – to alert activists by email to drilling activity in the province. In addition, major actions – such as the Stop the Frack Attack demonstration in Washington, DC, in July 2012 (endorsed by more than 130 organisations) or the worldwide Global Frackdown in September 2012 – often have sophisticated, dedicated websites that bundle fundraising, outreach, organisation and networking tools.

### Global networking

Rapid global networking helps to explain the speed and scale of the anti-fracking movement’s development. Although organised and focused primarily at the local and national levels, the anti-fracking movement extends globally through peer-to-peer activist networks, international environmental NGO campaigns, and shared ideological and political frameworks.

Networking is both passive, as when one group publicises the actions of another (as South Africa’s TKAG did for Australia’s Lock the Gate movement), and active, involving direct pooling of organisational resources and co-ordination of fundraising, messaging, direct action and policy advocacy. The ‘international coalition’ established in February 2012 between TKAG and the US’s Water Defense – a spin-off of New York’s Frack Action – highlights the active process of global networking. Describing hydraulic fracturing as a ‘global threat’, the groups swapped board members and agreed to co-operate on fundraising. Similarly, in Europe, the

UK's Frack Off and Bulgaria's Civil Society Against Shale Gas in early 2012 combined forces to mobilise grassroots activists against shale gas leases in Romania's Dobruja region on the heels of the Bulgarian moratorium. Meanwhile, French and particularly German anti-fracking activists are active in Poland's anti-fracking movement. These linkages have the potential to both stimulate anti-fracking activism, in line with grassroots mobilisation strategy, and professionalise existing anti-fracking groups through provision of training, activist 'toolkits' and strategic guidance.

International environmental NGOs also play a key global networking role. For example, Friends of the Earth, Greenpeace and the World Wide Fund for Nature (formerly World Wildlife Fund) each mount anti-fracking advocacy campaigns and support local anti-fracking groups. Yet in contrast with grassroots activists, focused primarily on local social, economic and environmental impacts, international environmental NGOs situate unconventional gas extraction largely within their efforts on climate change.

The intervention of international NGOs has inevitably pulled the anti-fracking movement – at the global level – towards the climate change agenda, meaning that purely climate change-focused groups, such as 350.org, have obtained a prominent position. This has occasionally resulted in friction within the anti-fracking movement, to the extent that some climate change-focused NGOs – though not the three listed above – view unconventional gas as a low carbon alternative to coal. Not only do such groups ignore pressing local impact concerns, they may also be more amenable to tighter regulation as opposed to an outright ban. In New York, for example, activists pushing for a ban on hydraulic fracturing in 2011 decried the more accommodationist stance of mainstream environmental NGOs, despite the organisational muscle those groups brought to the anti-fracking movement.

For international as well as local groups, therefore, global networking is both a means to an end – a global front against hydraulic fracturing – as well as an end in itself, in terms of positioning within the anti-fracking movement. The most vocal domestic anti-fracking groups, for example, were all 'partners' in the September 2012 Global Frackdown demonstrations, staking out ground as leaders of the global anti-

fracking movement. As global networking increases, and local groups combine to form national or international coalitions, there is likely to be more scope for top-down messaging, common advocacy platforms and co-ordinated direct action.

Not incidentally, networking is also instrumental to the fundraising strategies of anti-fracking groups. Many smaller anti-fracking groups were initially self-financed by dedicated activists, who were able to use the aforementioned free online platforms to keep overhead costs low. As some of these groups rise to prominence, they have increasingly shaded into a combination of online fundraising through direct appeals and grant-seeking. South Africa's TKAG, for example, launched an online fundraising appeal in September 2011, shortly before it upgraded its website from the free Blogger platform to a hosted server. Notably, this coincided with an upgrade of fundraising

mechanism from personal bank transfers to secure online credit card and bank transfers via GivenGain, a Swiss philanthropic foundation. A second stream of funding originates with philanthropic foundations: New York's Park Foundation, for example, is reported to have disbursed approximately \$3m to anti-fracking advocacy groups since 2009, including Gasland director Josh Fox's production company and New York Public Interest Research Group (NYPIRG), a long-standing progressive advocacy group and one of the more prominent state anti-fracking organisations. Finally, organisations for which anti-fracking is an adjunct to core campaign activities – which include international NGOs and political parties – sponsor activism out of programme budgets, and occasionally direct fundraising. Indeed, the visibility and resonance of hydraulic fracturing is used to drive donor interest in and (financial) support for these organisations' wider agendas.

[Anti-fracking demonstration in Lancashire, UK, September 2011](#)



## Direct action

Although anti-fracking direct action – primarily project site denial of access (blockades), equipment occupations and demonstrations – currently poses limited operational and security risks to unconventional gas development, it is becoming a more prominent feature of the anti-fracking movement. Direct action serves both strategic and tactical purposes. Strategically, it attracts media attention, raising public awareness of hydraulic fracturing, and thereby increasing receptiveness to anti-fracking messaging and aiding activist recruitment. Demonstrations, days of action and non-violent civil disobedience provide impetus and focus to the anti-fracking movement, helping to mobilise grassroots support, and generating solidarity both locally and globally. Direct action can also confer political influence on the anti-fracking movement, as the imposition of moratoriums in France, Bulgaria, South Africa, Czech Republic and elsewhere has demonstrated.

Blockades are a favoured non-violent direct action tactic across the environmental activist movement, particularly for rural gas drilling projects, which often depend on single, purpose-built access roads. Blockades generally do not require site security to be breached and can occur at a distance from the project. Furthermore, while the costs to activists of blockades are extremely low – both in terms of organisation and penalties – the potential for disruption to the target can be significant in terms of lost productivity and extra operating costs. The Lock the Gate movement is virtually predicated on blockades, and has targeted a range of operators and service companies in both Queensland and New South Wales. Blockades to prevent shale gas development have also occurred in Canada, the US, the UK and Poland, and are increasingly prominent across environmental direct action campaigns generally. Activists are increasingly actively courting arrest in the course of blockades, drawing increased media attention to their actions.

Direct action is also used tactically to disrupt unconventional gas development. More confrontational site and equipment occupations have characterised anti-fracking direct action in the US and UK, where environmental direct action movements originated in the 1970s and are entrenched. US Earth First! activists – representing

the country's most venerable environmental direct action group – in mid-2012 shut down a drilling operation in Pennsylvania's Moshannon State Forest using the well-honed tactic of tree sitting. Earth First! groups have also trained activists in New York, Ohio and other states in direct action tactics. Similarly, members of Frack Off and Rising Tide in the UK twice occupied drilling operations in Lancashire in late 2011.

These actions in particular point to the central role of climate change activists in anti-fracking direct action. Frack Off grew out of the Camp for Climate Action, a direct action campaign organised after the signing of the Kyoto climate change treaty in 1999 and responsible for a range of actions targeting the coal industry, particularly in the run-up to the 2009 UN climate summit in Copenhagen (Denmark). The International Rising Tide Network, of which the UK branch is one of the most active, was also launched after Kyoto, with subsequent branches in Australia and the US (co-ordinated with Earth First!). Both groups have helped to organise the anti-fracking movement in the UK, jointly sponsoring a demonstration against the Unconventional Gas Conference in London in March 2012. Climate change advocacy groups have also organised anti-fracking direct actions in South Africa (a demonstration in Cape Town in August 2011 organised by the Climate Justice Campaign precipitated the country's moratorium) and Australia (a rig occupation in the Pilliga Forest region in July 2011, orchestrated by Rising Tide and local groups).

Isolated acts of vandalism and sabotage targeting drilling sites have also been reported in some regions, though levels and severity of activity remain far removed from those affecting the conventional oil and gas, coal or timber industries. In Poland, these include the theft of seismic cabling and other equipment, while in the US, water tanks and vehicles have reportedly suffered minor vandalism in the Marcellus shale region. In Canada, seismic equipment was vandalised in 2011 at a site in New Brunswick province, amid demonstrations by local residents against hydraulic fracturing. Depending on the outcome of unconventional gas policy battles, such confrontational direct action could become more routine and potentially cause more property damage. However, direct actions are extremely unlikely to become violent, or do more than seek to disrupt operations and generate sympathetic publicity for the anti-fracking movement.

## WHAT'S NEXT?

2012 is likely to set the high-water mark for the anti-fracking movement. Regulatory reviews have been concluded in key battlegrounds, including New York, Bulgaria, South Africa and New South Wales, setting the tone for stricter long-term management of the unconventional gas industry. Technological innovations are reducing the environmental impact of hydraulic fracturing by, among other things, increasing the efficiency of wastewater recycling and storage, reducing the likelihood of seismic events, and changing the mix of fracturing fluids to reduce water usage and fracturing pressure. The anti-fracking movement itself – though far from exhausted – is grappling with the consequences of its successes, struggling to maintain momentum after winning tighter regulation, moratoriums and bans.

These dynamics point to three trends that could guide the future of the anti-fracking movement: expansion into new jurisdictions; incorporation into broader issue advocacy; and radicalisation of direct action against the unconventional gas industry.

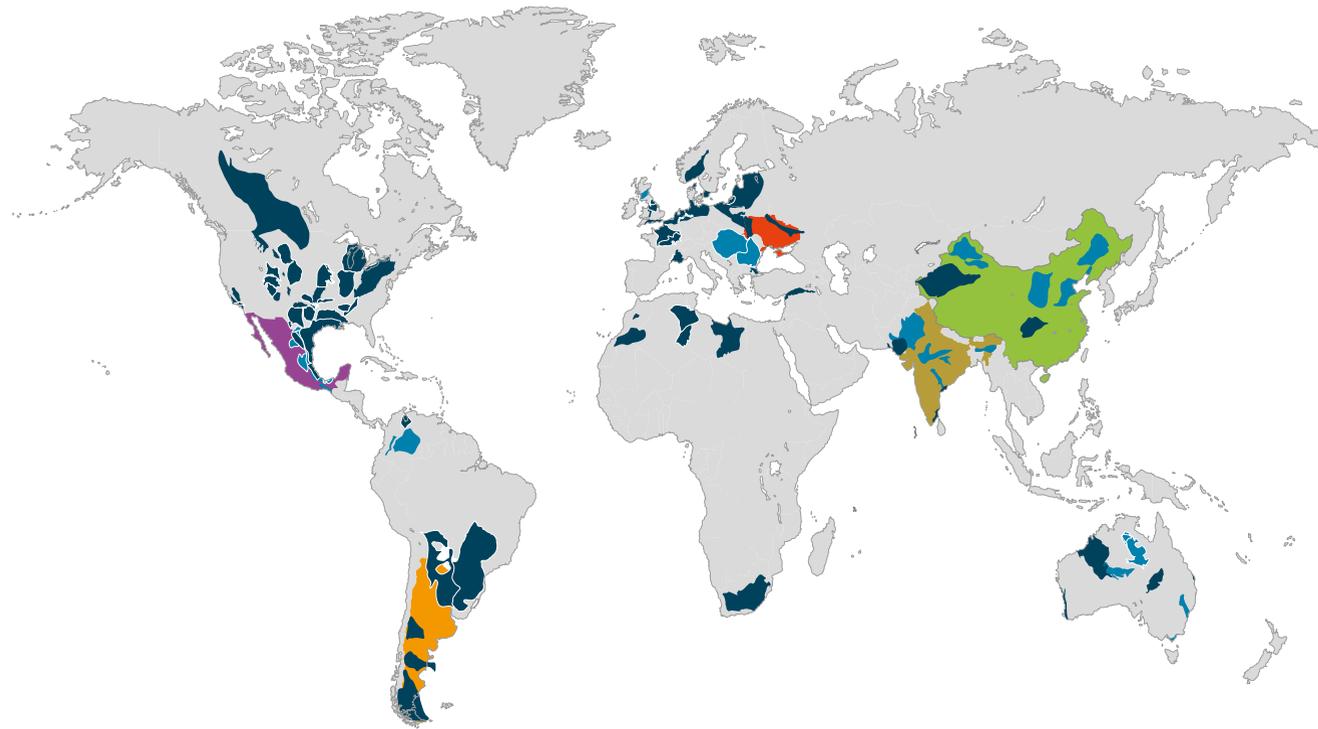
## New geographies

Some of the most prospective basins for unconventional gas development worldwide remain in very early stages of assessment and exploration. Could the anti-fracking movement spread to countries such as Argentina, Mexico, India, Ukraine and China?

### ARGENTINA



In Argentina, as in South Africa, water usage and contamination concerns are likely to resonate in arid Neuquén province. Indeed, indigenous Mapuche protesters in the province cited water contamination as a motivation for seizing a gas processing plant near Zapala in late 2011. Domestic environmentalists have generally been increasingly vocal in recent years on mining sector issues – leading some foreign companies to withdraw – and could seize the opportunity to improve links with global environmental groups through the anti-fracking movement. As a case in point, Argentina's Observatorio Petrolero Sur (OPSUR) – an anti-fossil fuel group and prospective leader of the nascent anti-fracking movement – has celebrated the 'global resistance' against



hydraulic fracturing and started to gain exposure among European anti-fracking groups. Meanwhile, Argentine anti-fracking groups are replicating the model of France's collectif movement by hosting public meetings and debates to raise awareness and promote anti-fracking messaging.

**MEXICO** 

Meanwhile, in Mexico, state monopoly Pemex has sunk exploration wells into the highly prospective Salinas-Burgos-Picachos basin, an extension of Texas's Eagle Ford shale. A significant anti-fracking movement has yet to emerge, but environmental direct action (under the auspices of the Earth Liberation Front or anarchist 'total liberation' groups) has increased over the last two years. What anti-fracking concerns there are broadly align with those in the US regarding water contamination and air pollution, and YouTube videos purporting

to show gas-contaminated water being set on fire are reportedly circulating among Mexican environmental activists. That said, public sentiment seems to be broadly on the side of shale exploitation as a source of jobs and economic development, at most calling for Mexico's regulatory framework for hydraulic fracturing to be updated. This suggests that distributional issues – there are concerns that shale gas profits will be exported from development regions such as Coahuila – will play more strongly than environmental concerns.

**INDIA** 

In India, which is in the process of promulgating a new shale gas regulatory framework, community activism has long been a major operational risk concern for business. One of the main concerns is land access in heavily populated basins, a routine source of community tensions and protests because of policies of 'forcible

acquisition' and inadequate compensation. Another concern is India's active environmental movement, influential on issues ranging from genetically modified (GM) farming to iron ore mining to nuclear power. Broadly, public opinion – conditioned by chronic power shortages and the boon of hydraulic fracturing to India's guar industry, which supplies a key ingredient of hydraulic fracturing fluid – seems to be on the side of unconventional gas development. However, this will depend on containing environmental impacts, while delivering the 'win-win' situation for local communities promised by the Directorate General of Hydrocarbons.

**UKRAINE** 

Ukraine, with its famously fraught gas supply relationship with Russia, stands to benefit significantly from domestic unconventional gas development, with the government announcing initial exploration licence rounds in early 2012. Yet, for all the potential strategic benefits, unconventional gas extraction faces similar risks to those in the rest of Europe. High population densities in shale areas complicate exploration, while local and national media are picking up on the environmental risks associated with hydraulic fracturing, such as water contamination. Ukraine's domestic environmental movement is weak and disorganised. However, given that local authorities (councils, administrations, branches of ministries and inspectorates) have a decisive say on exploration projects, and local business and political elites often attempt to muscle in on projects through legal challenges and inspections, the context is ripe for vested interests to instigate anti-fracking 'protests' to apply pressure on foreign investors.

**CHINA** 

Finally, some shale deposits have proven to be less enticing and costlier to develop than suggested by exploratory drilling. China's enormous potential, for example, is hampered by complex geology that will require new techniques and lots of practice to make unconventional gas development commercial. Water scarcity and population density in the prospective Sichuan basin are also potential stumbling blocks to intensive development, despite a government fully behind the industry.

However, the anti-fracking movement is unlikely to be the most significant source of risks to the unconventional gas industry in many contexts. In Argentina, the nationalisation in early 2012 of energy company YPF – which has sizeable acreage and in December 2011 announced hydrocarbon finds in the highly prospective Vaca Muerta play – underscored lingering high-level political risks that can undermine oil and gas investment. Highly regulated energy sectors – characterised by high taxation, price setting, strong trade unions and dominant state-controlled companies – can be hostile to foreign investors, as concerns over gas pricing in Ukraine attest. Furthermore, concerns about insecurity and integrity can be acute. Mexican cartels, for example, are reportedly using trucking routes through the Eagle Ford shale – which straddles the US-Mexico border – to bypass security checkpoints and traffic narcotics into Texas.

#### Wider issues

In addition to new geographies, the anti-fracking movement is increasingly linking with broader movements on energy, environmental and public health issues. In part, this reflects a desire to remain relevant (and operational) in countries where the anti-fracking agenda has attracted less public attention following tighter regulation or a moratorium. In France, for example, activists have bemoaned reductions in interest and activity following the imposition of the ban in 2011. They have subsequently turned their focus both inward, to opposing the exemption for hydraulic fracturing for ‘scientific experimentation’, and outward, by focusing on nuclear energy and France’s overall energy policy. French activists, along with those in other countries prohibiting or regulating the unconventional gas industry, also perceive a need for vigilance: politicians and industry, they argue, will always seek to water down, eliminate or circumvent

restrictions on hydraulic fracturing once political urgency evaporates. Bulgarian activists, for example, re-mobilised in mid-2012 amid government discussions on lifting the national moratorium.

Expanding to other issues also reflects natural issue linkages and the particular agendas of the movement’s key constituents. For example, in addition to hydraulic fracturing, US-based Water Defense (linked to New York’s Frack Action through celebrity activist Mark Ruffalo) has launched campaigns against Canadian oil sands, deepwater drilling in the Gulf of Mexico, coal mining and nuclear power – all issues embedded in the contemporary environmental and climate change movements.

In general, the anti-fracking movement is gradually becoming a component of the broader environmental movement: the UK’s Frack Off – in line with its climate justice roots – has promoted campaigns against coal mining, while US and Australian anti-coal groups have launched anti-fracking campaigns. Other progressive movements have also conscientiously cultivated links to the anti-fracking movement, both out of solidarity and – likely – for the publicity value. Occupy San Jose (California), Spain’s anti-austerity 15M movement and ATTAC France, for example, in September 2012 endorsed the Global Frackdown, along with a range of other grassroots progressive organisations.

#### Radicalisation

A final concern is that portions of the anti-fracking movement could radicalise in response to both internal fragmentation and shifts in the policy environment. Currently, nearly all groups advocate regulatory or legal restraints on the unconventional gas industry, achieved through policy advocacy or non-violent direct action. Yet hydraulic fracturing is likely to be ultimately permitted in many, if not most, jurisdictions worldwide. This would obviously frustrate the ambitions of those in the anti-fracking movement committed to an outright ban or moratorium. As with the conventional oil and gas, coal, nuclear, timber and other sectors, this could make unconventional oil and gas a target of more radical direct action.

If the direct action tactics of other wings of the environmental movement are any indication, efforts would be likely to revolve around directly disrupting operations through blockades,

Gas processing plant near Houston, Pennsylvania



occupations or low-level sabotage. Violence directed against personnel would be highly unlikely, both for philosophical reasons and because of legal deterrents such as anti-terrorism legislation in the US and UK. However, sabotage – already a feature of isolated actions in several countries, as noted above – could feature more prominently as a direct action tactic. Given the challenges and concerns around targeting gas infrastructure itself – namely, the risk of catastrophic and unintentional injury or environmental damage – any such attacks would be more likely to focus on ancillary components of the industry, such as staging and storage sites, as well as support vehicles.

## HOW CAN THE INDUSTRY RESPOND?

Based on our assessment of the global anti-fracking movement, the industry should target four key areas to improve its relations with stakeholders:

### Acknowledge grievances

First and foremost, the industry needs to acknowledge the legitimacy of local grievances. Denying the agency of local communities by blaming ‘fear’ and ‘hysteria’ is winning the industry – often an ‘outsider’ – few friends. Acknowledging grievances would begin to repair its crippling trust deficit with local communities. Movements towards greater transparency and voluntary disclosure, however grudging, are a positive step in this direction and accommodate a major grievance shared by anti-fracking movements worldwide. Meaningful consultations with local stakeholders, instead of didactic ‘information sessions’ to market the presumed benefits of drilling, would help to identify potential points of tension to be addressed through both outreach and grievance mechanisms.

### Engage communities

Secondly, the industry needs a broad-spectrum political engagement strategy that is not overly dependent on cosy relationships with regulators, power-brokers and other narrow points of influence, which are easily tarred by general mistrust of central governments and are a source of political risk. In part, this means laying groundwork

at the local level with municipal and provincial officials. Such local lobbying is expensive, but many companies have dedicated teams in the wake of legislative and regulatory changes giving more clout to local authorities.

### Reduce impacts

Thirdly, the industry needs to continue to make good faith efforts to reduce adverse impacts across the board. This means not only strengthening compliance, ensuring subcontractor performance and embracing new technologies, but also making conscientious project decisions regarding the siting of well pads, screening of light and noise, and routing of truckloads. This would entail absorbing increased mitigation costs, which the IEA in its 2012

report on ‘golden rules’ estimates at up to 7%. But it would also reduce non-ideological objections to the industry.

### Create more winners

Finally, in addition to reducing the negative impacts of gas development, companies need to ensure the benefits are both tangible and as widely and fairly distributed as possible. For most communities, this means procuring as much as possible locally, providing jobs and training to local workers, paying required taxes, and – crucially – making long-term investments that deliver a sustained economic boost. The encompassing but diffuse benefits of lower gas prices are one thing; an industrial base that provides well-paid jobs for more than two or three years of drilling is a more concrete way to distribute the benefits of unconventional gas development.

Hydraulic fracturing staging area outside Cecil, Pennsylvania



## ANTI-FRACKING ACTIVISM RISK REGISTER FOR CURRENT AND PROSPECTIVE SHALE COUNTRIES

COUNTRY	EST. SHALE RESERVES (TCF)	POLITICAL RISK	SECURITY RISK	ANTI-FRACKING ACTIVISM	POLICY TREND	SHALE GAS STATE OF PLAY (AS OF OCTOBER 2012)
China	1,275	M; L in Hong Kong	L; M in non-central districts of cities in Guangdong Province; remote border areas; and Xinjiang's south-western prefectures	Minor	Supportive	Government seeking to acquire technology and experience through strategic alliances with foreign operators and, as of September 2012, encouraging foreign participation in domestic shale gas through public tender process.
US	862	L	L; M in deprived urban areas	Significant	Neutral	Federal government and many state governments broadly supportive, but several local and state moratoriums are in place, especially in eastern US. Tighter environmental regulation being introduced at local, state and national levels.
Argentina	774	M	L; M in Buenos Aires	Moderate	Neutral	Increased regulatory uncertainty following national and provincial government intervention in licences, pricing and regulation from early 2012.
Mexico	681	M	M; H in Chihuahua, Coahuila, Nuevo León, Tamaulipas, Jalisco, Sinaloa, Durango, Guerrero, Michoacán, San Luis Potosí and Veracruz states	Moderate	Supportive	Energy fiscal, environmental and economic policy review of unconventional gas launched in October 2012.
South Africa	485	M	M; H in Johannesburg, deprived urban areas	Significant	Supportive	Karoo basin moratorium lifted in September 2012, but government vows strict oversight of development through new 'monitoring committee'.
Australia	396	L	L	Significant	Neutral	Initial shale gas production achieved in October 2012 in South Australia, with exploration under way in western and northern provinces. Coal seam gas moratoriums in place in some provinces, but significant development in key eastern basins proceeding under tight environmental and land regulation.
Canada	388	L	L	Significant	Neutral	A moratorium was imposed in Quebec province in March 2011, pending findings of an environmental review, which are expected by 2014. Quebec's new separatist government has signalled its intention to further restrict or perhaps permanently ban shale gas development. However, significant development of shale formations is under way in western provinces.
Libya	290	H	H	Minor	Supportive	No active exploration or development of shale reserves.
Algeria	231	H	H; M in main urban centres, southern oil-producing areas	Minor	Supportive	Initial phases of exploration and resource assessment under way with foreign participation.
Brazil	226	M	M	Moderate	Neutral	Shale licensing continues to languish as government attention remains focused on offshore, pre-salt oil extraction.

**ANTI-FRACKING ACTIVISM RISK REGISTER FOR CURRENT AND PROSPECTIVE SHALE COUNTRIES continued**

COUNTRY	EST. SHALE RESERVES (TCF)	POLITICAL RISK	SECURITY RISK	ANTI-FRACKING ACTIVISM	POLICY TREND	SHALE GAS STATE OF PLAY (AS OF OCTOBER 2012)
Poland	187	L	L	Minor	Supportive	The government in October 2012 adopted new oil and gas legislation designed to streamline environmental review, facilitate state participation in the shale gas industry, incentivise investment via the tax structure and deregulate the oil and gas industry's labour market.
France	180	L	L; M in deprived urban areas	Significant	Hostile	An indefinite ban imposed in June 2011 was reaffirmed by the government in September 2012.
Norway	83	I	I	Minor	Neutral	No active exploration or development of shale reserves.
Chile	64	L	L	Moderate	Neutral	Preliminary exploration and development activities in Magallanes basin.
India	63	M	M; H in Assam, Kashmir, Manipur, Nagaland, Tripura; Bihar, Jharkhand, Chhattisgarh, border districts of Orissa, northern areas of Andhra Pradesh, western districts of West Bengal and eastern districts of Maharashtra	Moderate	Supportive	Draft shale gas regulation introduced in July 2012 based on production sharing contracts, with foreign companies expected to be invited to bid in initial licence round in 2013.
Paraguay	62	M	L; M in eastern border, tri-border area	Minor	Supportive	No active exploration or development of shale reserves.
Pakistan	51	H	H; E in Afghan border areas	Minor	Supportive	Review of national policy for shale and other unconventional gas development under way.
Bolivia	48	H	M	Moderate	Neutral	No active exploration or development of shale reserves.
Ukraine	42	M	M	Minor	Supportive	Initial exploration contracts signed with international operators in May 2012.
Sweden	41	I	I; L in Stockholm and surroundings, Gothenburg, Malmö	Significant	Neutral	Small-scale exploration continues in the Alum shale basin.
Bulgaria	35	M	L	Significant	Hostile	Legislative moratorium imposed in January 2012. Environmental review committee mandate extended for six months in October 2012.
Denmark	23	I	I; L in Copenhagen, Aarhus	Moderate	Neutral	Government review of shale gas policy commenced in early 2012 and initial exploration under way.
UK	20	L	L	Significant	Neutral	A temporary halt on development because of seismic events associated with hydraulic fracturing was lifted in April 2012. Despite local opposition, the national government remains broadly supportive of shale gas development under existing regulation.

**ANTI-FRACKING ACTIVISM RISK REGISTER FOR CURRENT AND PROSPECTIVE SHALE COUNTRIES continued**

COUNTRY	EST. SHALE RESERVES (TCF)	POLITICAL RISK	SECURITY RISK	ANTI-FRACKING ACTIVISM	POLICY TREND	SHALE GAS STATE OF PLAY (AS OF OCTOBER 2012)
Colombia	19	M	M; H in Cali, remote rural areas, border areas with Venezuela and Ecuador	Minor	Supportive	Initial shale licence round conducted in October 2012, with emphasis on boosting liquid reserves.
Netherlands	17	L	L	Moderate	Neutral	Local opposition to shale gas projects has presented legal and operational obstacles, though the government remains broadly supportive of developing the industry.
Turkey	15	M	L; M in Istanbul, south-eastern cities; H in rural and border areas of east	Minor	Supportive	Initial foreign-led exploration activities commenced in September 2012 in the Anatolian basin.
Morocco	11	L; M in Western Sahara	L; M in Western Sahara	Moderate	Supportive	Initial exploration commenced in late 2011.
Venezuela	11	H	M; H in Caracas, major urban centres, Colombian border states	Minor	Neutral	No active exploration or development of shale reserves.
Germany	8	L	L	Significant	Neutral	Moratorium imposed in North-Rhine Westphalia state in March 2011. Federal government inquiries into environmental impacts in September 2012 recommended that limited development continue with tight oversight. Federal policy on shale gas is expected to be proposed in 2013.
Lithuania	4	L	L	Minor	Supportive	Initial shale gas tender process launched in June 2012.
Romania	N/A	M	L	Significant	Hostile	An informal moratorium on issuing exploration licences remains in place, with the ruling party under political pressure to keep its electoral pledge for a formal ban.
Czech Rep.	N/A	L	L	Moderate	Hostile	Two-year moratorium on exploration imposed in October 2012 to facilitate policy review of environmental impacts.

## POLITICAL RISK DEFINITIONS

Political risk evaluates the likelihood of state or non-state political actors negatively affecting business operations in a country through regime instability or direct/indirect interference, and also evaluates the influence of societal and structural factors on business. State actors can include domestic and foreign governments, parliament, the judiciary, regulatory bodies, state and local administrations and the security forces. Non-state actors can include insurgent groups, labour forces, campaign groups, lobbies, other companies, organised criminal groups and international organisations. Societal and structural factors can include corruption, infrastructure, ease of establishing and maintaining a functioning business, and bureaucratic and business culture. The impact on companies can include judicial insecurity, corruption, reputational damage, expropriation and nationalisation, contract uncertainty, international sanctions, bureaucratic delay, partiality in contract and tender awards, campaigns and protests. Political risk may vary for companies and investment projects according to factors such as industry sector and investor nationality.

### INSIGNIFICANT

The environment for business is benign. For example: political stability is assured, investor-friendly policies are entrenched, there is no threat of contract re-negotiation or repudiation, and infrastructure for business is excellent.

### LOW

Political and operating conditions are broadly positive. Occasional and/or low-level challenges do not significantly impede business. For example: government policies are investor-friendly with some exceptions, contracts are generally respected,

non-state actors have little adverse influence over government decisions, infrastructure is generally robust or there is little risk of reputational damage.

### MEDIUM

While the environment provides generally sound conditions for business, significant challenges can and do emerge. For example: hostile lobby groups exert disproportionate influence over government policy, political instability delays essential reforms, contracts are subject to uncertainty or occasional change, elements of the infrastructure are deficient, or the activities of unions or protest groups impede operations.

### HIGH

The political and operating environment presents persistent and serious challenges for business. For example: there is a credible risk of contract repudiation or re-negotiation by state actors, political instability threatens fundamental alterations to the nature of the state, government policy is capricious or harmful to business, corruption is endemic across all levels of officialdom, or regulations are onerous and their implementation is capricious.

### EXTREME

Conditions are hostile for business. For example: direct intervention such as nationalisation or expropriation of assets is likely, systemic political instability leads to the absence of rule of law, the nature of the regime brings severe reputational risks, government structures are inadequate or infrastructure is almost entirely deficient.

## SECURITY RISK DEFINITIONS

Security risk evaluates the likelihood of state or non-state actors engaging in actions that harm the financial, physical and human assets of a company, and the extent to which the state is willing and able to protect those assets. Actors that may pose a security risk include political extremists, direct action groups, the security forces, foreign armies, insurgents, petty and organised criminals, protesters, workforces, local communities, indigenous groups, corrupt officials, business partners, and in-country company management and staff. The impact of security risk on companies can include war damage, theft, injury, kidnap, death, destruction of assets, information theft, extortion, fraud, loss of control over business, and disruption to operations caused by damage or denial of access to buildings or vital infrastructure caused by terrorist attacks, threats or official responses. Security risk may vary for companies and investment projects according to factors such as industry sector, investor nationality and geographic location.

### INSIGNIFICANT

The security environment for business is benign. For example: the authorities provide effective security, there is virtually no political violence, public disorder is rare and there are no known active domestic groups or issues likely to fuel terrorism.

### LOW

Security conditions are broadly positive and occasional and/or low-level challenges do not significantly impede business. For example: the authorities provide adequate security, organised crime only marginally affects business and protest activity rarely escalates into threatened or actual violence. Rare but large-scale terrorist attacks may pose indirect threats to personnel or assets, or

low-level attacks do not target business and are not aimed at causing casualties.

### MEDIUM

Aspects of the security environment pose challenges to business, some of which may be serious. For example: there are some deficiencies in state protection, organised criminal groups frequently target business through fraud, theft and extortion, domestic terrorist groups stage regular attacks that cause disruption to (but do not target) business or there are infrequent large-scale attacks and/or opportunistic small-scale attacks on foreign or business assets and personnel.

### HIGH

The security environment presents persistent and serious challenges for business; special measures are required. For example: state protection is very limited, insurgents are engaged in a sustained campaign affecting business, kidnap poses a severe and persistent threat to foreign personnel, terrorist groups stage regular attacks against foreign or business assets, or weak security forces are incapable of dealing with terrorist activity.

### EXTREME

Security conditions are hostile and approaching a level where business is untenable. For example: there is no law and order, there is outright war or civil war, personnel constantly face the threat of targeted and potentially life-endangering violence, a terrorist group (or groups) is staging a sustained, high-intensity campaign that severely hinders business, or terrorists frequently target foreign personnel or business activity.

## SOCIAL ACTIVISM RISK RATING DEFINITIONS

### MINOR

Activist groups are weakly organised and principally domestic in scope. Broader agendas incorporate general environmental and energy issues. Social activism does not pose significant political, operational or security risks to unconventional gas development.

### MODERATE

Activist groups are somewhat organised with some international linkages. Environmental and energy issues are key drivers of social activism. Social activism poses some political, operational and security risks to unconventional gas development.

### SIGNIFICANT

Activist groups are well-organised and actively network internationally. Campaigns are directed specifically against unconventional gas development. Social activism poses considerable political risks and moderate operational and security risks to unconventional gas development.

## POLICY TREND DEFINITIONS

These trends refer to the medium term (three- to five-year) outlook for unconventional gas development, accounting for current and prospective developments.

### SUPPORTIVE

Government strongly supports increased unconventional gas development, especially on energy security and economic development grounds. Policy aims to support investment through favourable tax regimes, streamlined permitting and infrastructure provision.

### NEUTRAL

Government is cautious or divided in its approach towards unconventional gas development, often between national and provincial or local authorities. Policy aims to reduce the intensity, and mitigate the impacts of unconventional gas development through strengthened environmental review, increased local control and higher rates of taxation.

### HOSTILE

Government directly or indirectly opposes unconventional gas development. In addition to moratoriums and bans, policy aims to discourage unconventional gas development through unfavourable tax regimes, licence cancellations and strict environmental restrictions.

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