

ENGAGING WITH OIL AND GAS COMPANIES ON FRACKING

AN INVESTOR GUIDE



THE SIX PRINCIPLES

PREAMBLE TO THE PRINCIPLES

As institutional investors, we have a duty to act in the best long-term interests of our beneficiaries. In this fiduciary role, we believe that environmental, social, and governance (ESG) issues can affect the performance of investment portfolios (to varying degrees across companies, sectors, regions, asset classes and through time). We also recognise that applying these Principles may better align investors with broader objectives of society. Therefore, where consistent with our fiduciary responsibilities, we commit to the following:

- 1** We will incorporate ESG issues into investment analysis and decision-making processes.
- 2** We will be active owners and incorporate ESG issues into our ownership policies and practices.
- 3** We will seek appropriate disclosure on ESG issues by the entities in which we invest.
- 4** We will promote acceptance and implementation of the Principles within the investment industry.
- 5** We will work together to enhance our effectiveness in implementing the Principles.
- 6** We will each report on our activities and progress towards implementing the Principles.



PRI's MISSION

We believe that an economically efficient, sustainable global financial system is a necessity for long-term value creation. Such a system will reward long-term, responsible investment and benefit the environment and society as a whole.

The PRI will work to achieve this sustainable global financial system by encouraging adoption of the Principles and collaboration on their implementation; by fostering good governance, integrity and accountability; and by addressing obstacles to a sustainable financial system that lie within market practices, structures and regulation.

PRI DISCLAIMER

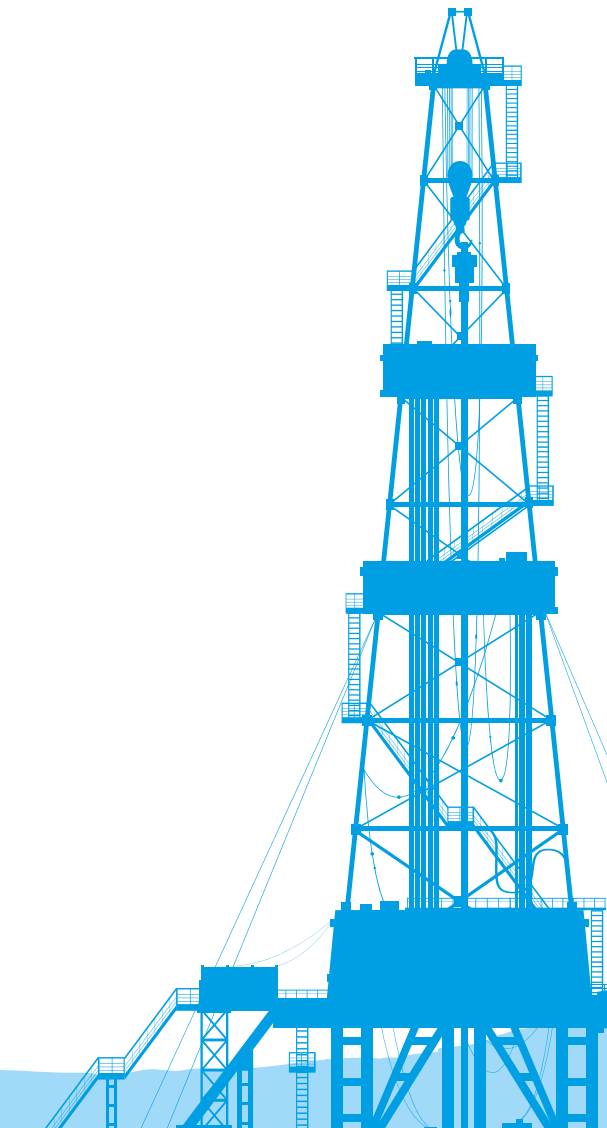
The information contained in this report is meant for the purposes of information only and is not intended to be investment, legal, tax or other advice, nor is it intended to be relied upon in making an investment or other decision. This report is provided with the understanding that the authors and publishers are not providing advice on legal, economic, investment or other professional issues and services. PRI Association is not responsible for the content of websites and information resources that may be referenced in the report. The access provided to these sites or the provision of such information resources does not constitute an endorsement by PRI Association of the information contained therein. Unless expressly stated otherwise, the opinions, recommendations, findings, interpretations and conclusions expressed in this report are those of the various contributors to the report and do not necessarily represent the views of PRI Association or the signatories to the Principles for Responsible Investment. The inclusion of company examples does not in any way constitute an endorsement of these organisations by PRI Association or the signatories to the Principles for Responsible Investment. While we have endeavoured to ensure that the information contained in this report has been obtained from reliable and up-to-date sources, the changing nature of statistics, laws, rules and regulations may result in delays, omissions or inaccuracies in information contained in this report. PRI Association is not responsible for any errors or omissions, or for any decision made or action taken based on information contained in this report or for any loss or damage arising from or caused by such decision or action. All information in this report is provided "as-is", with no guarantee of completeness, accuracy, timeliness or of the results obtained from the use of this information, and without warranty of any kind, expressed or implied.

ACKNOWLEDGEMENTS

We would like to thank members of the PRI's Fracking Engagement Group who contributed to the development of this document:

- Steven Heim – Boston Common Asset Management
- Jennifer Coulson – British Columbia Investment Management Corporation
- Kim Catechis – Martin Currie Investment Management
- Laura Gosset – SHARE (Shareholder Association for Research & Education)
- Cathrine De Connick-Lopez – Columbia Threadneedle Investments

Thank you also to Leah Turino (Independent ESG Analyst) for conducting the 2016 public disclosure benchmark assessment and analysis for the engagement, as well as Julia Leske (CAER), Dr. Richard Liroff (Investor Environmental Health Network), Niamh Whooley (Société Générale) and Sean Wright (Environmental Defense Fund).



CONTENTS

EXECUTIVE SUMMARY	5
INTRODUCTION	6
FRACKING: EVOLVING RISKS AND OPPORTUNITIES	8
WHY ENGAGE ON FRACKING?	9
CASE STUDY: ENGAGING TO DISCLOSE FRACKING PRACTICES	10
CASE STUDY: CREATING A NEW MODEL FOR LONG-TERM SHAREHOLDER INTERACTION THAT ACHIEVES IMPORTANT ESG GOALS WHILE ALSO REDUCING RISKS	11
PRIOR TO ENGAGING	12
FOCUS AREA: GOVERNANCE	13
FOCUS AREA: WATER USE AND QUALITY	14
FOCUS AREA: GREENHOUSE GASES AND OTHER AIR EMISSIONS	16
FOCUS AREA: COMMUNITY IMPACT AND CONSULTATION	17
RECOMMENDATIONS FOR FUTURE ENGAGEMENT	18
APPENDIX A: PRI-COORDINATED COLLABORATIVE ENGAGEMENT – CHALLENGES AND RESULTS	20
APPENDIX B: KEY RESOURCES	26

EXECUTIVE SUMMARY

The production of oil and gas via hydraulic fracturing ('fracking') remains important and yet can be viewed as a contentious method in some regions, with community controversies, bans and moratoria in different areas. The 'shale revolution' saw production of oil and gas from fracked wells soar in the US in the past decade and natural gas is seen as a cleaner fuel compared to coal. However, the global operating context for oil and gas companies has changed rapidly in recent years, with fluctuating oil prices and a shifting regulatory context to transition towards a low-carbon economy.

Bearing in mind the changing market context and the operational-level risks associated with fracking, investors need to be prepared to engage on the issue today and understand the potential risks for future operations as the market and regulatory context evolves. Fracking risks that are of concern to investors are:

- operational and physical risks;
- methane and other greenhouse gas emissions leaks;
- reputational risk and social license to operate;
- policy and regulatory risks.

Taking the lessons learnt from the PRI-coordinated engagement, which saw 87% of the companies engaged with improve their disclosure of fracking-related policies, practices and management systems, this guide outlines why fracking is an important issue for engagement. It also provides investors with tried and tested questions to encourage oil and gas companies in their portfolio to minimise risks related to fracking.

This guide provides an overview to some key steps to consider before engaging with companies on the above risks. A different approach should be considered when engaging with service providers because of the different role they play to producers.

Engagement questions, accompanied by the basic expectation from investors and follow-up themes, are structured under four focus areas:

- governance;
- water use and quality;
- greenhouse gases and other air emissions;
- community impact and consultation.

Engagement questions in each of these areas are available in this guide, beginning from page 13, and also in short form in a two-page 'Quick reference guide' which is available [here](#).

While companies significantly improved their disclosure during the course of the PRI-coordinated engagement, gaps were identified where companies could still improve, and these are recommended areas for future investor engagement ([see page 18 for further details](#)):

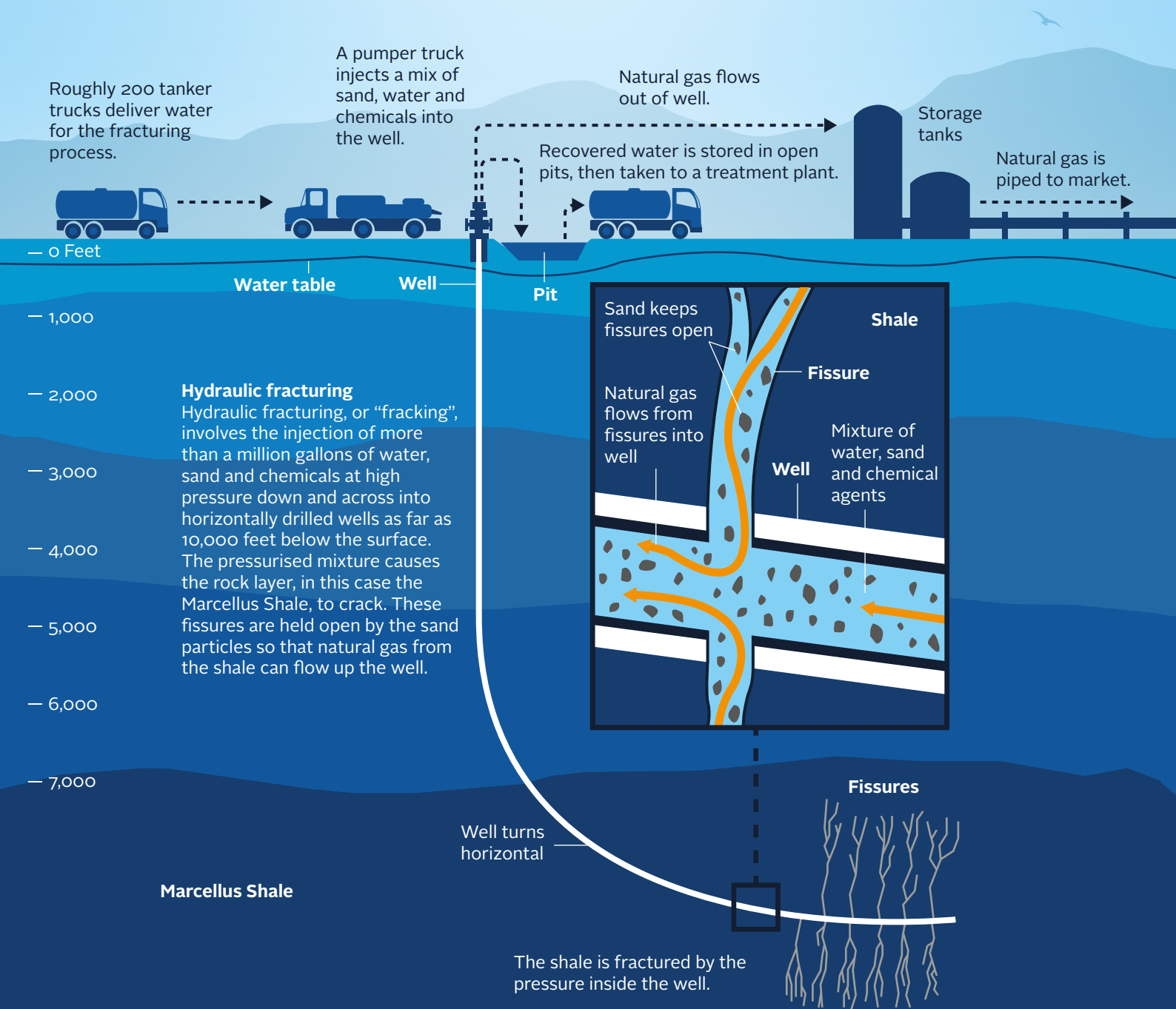
1. Encourage companies to reduce and report on their methane emissions.
2. Encourage companies to continue to engage with stakeholders and implement grievance mechanisms.
3. Encourage companies to monitor and report on water quality and availability.

INTRODUCTION

The production of oil and gas via hydraulic fracturing ('fracking') remains important and yet can be viewed as a controversial method in some regions. There are many risks associated with fracking such as methane leakages and the use of toxic chemicals, and community impacts and

controversies. In 2013, in the midst of the 'shale revolution,' investors sought to better understand companies' ability to identify, manage and reduce fracking-related risks, and encourage enhanced disclosure of company policies and management systems through engagement.

WHAT IS FRACKING?



From 2014-2016, a group of 41 PRI signatories, with assets under management of USD\$5.1 trillion, engaged with 37 companies using a benchmark conducted in 2013¹ as a basis for the dialogues. The benchmark consisted of 56 indicators, developed by the PRI Fracking Steering Committee², reflecting fracking policies, commitments and performance metrics. In 2016, a repeat of the benchmark was conducted for 26 producing companies and four service providers³. The results showed that:

- 26 out of the 30 companies (87%) that were benchmarked in 2016 improved their disclosure of fracking-related policies, practices and management systems.
- The most improved company increased its disclosure score by 47%⁴.
- Specific indicators, including incorporating fracking into sustainability policies; reporting a commitment to well integrity standards; and reporting on metrics were disclosed by more than 80% of companies.

Despite the improvements, there is still significant scope for companies to improve their fracking practices in order to reduce risks and make the most of opportunities. Full results of the PRI-coordinated engagement are detailed in the [appendix](#).

87% of the engagement companies improved their disclosure of fracking-related policies, practices and management systems during the period of engagement.

Taking the lessons learnt from the PRI-coordinated engagement, this guide outlines why fracking is an important issue for engagement, even within the changing economic and regulatory context. It also provides investors with tested questions to encourage oil and gas companies in their portfolio to minimise risks related to fracking.

¹ PRI (2013) [PRI-Coordinated engagement on fracking: Research on company disclosure and practices](#)

² The original Steering Committee consisted of PRI signatories: Boston Common Asset Management, British Columbia Municipal Pension Plan, Martin Currie Investment Management, Natixis Asset Management, Nordea, Old Mutual plc, PGGM Investments, Rathbone Brothers Plc, SNS Asset Management, and Threadneedle Asset Management Ltd.

³ In 2013, 46 companies were benchmarked. Out of the 46 benchmarked companies, 37 companies were chosen for engagement by lead investors. Seven of the company dialogues were not pursued thanks to a variety of reasons. Therefore only 30 companies were benchmarked in 2016.

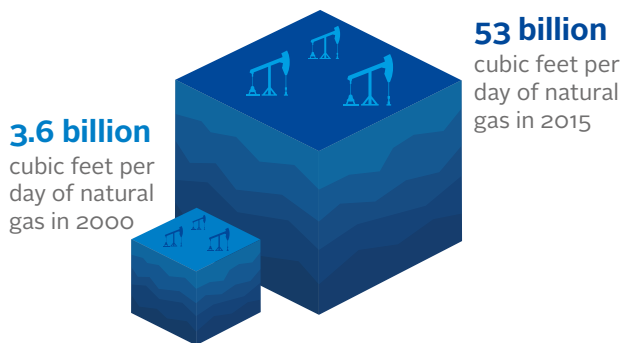
⁴ This company scored a total of 13 out of a possible 56 points (23%) in the 2013 benchmark and improved their disclosure to score 39 (70%) in 2016.

FRACKING: EVOLVING RISKS AND OPPORTUNITIES

The global operating context for oil and gas companies has changed rapidly in recent years. Despite production of oil and gas from fracked wells soaring, the global oil and gas industry has been slowly decreasing overall production owing to declining oil prices in recent years.

This volatility has seen the cost of a barrel plunge from US\$100 to below US\$50. Low prices have become the deciding factor on whether a company will continue fracking operations. As a result, some companies are sitting on drilled but uncompleted wells, waiting for higher oil prices, raising the prospect of stranded assets, and concerns over debt obligations or bankruptcy.

Production of oil and gas from fracked wells^{5,6}



In addition, the regulatory context is also shifting. COP21 in 2015 resulted in a legally-binding global deal to limit global warming to well below 2°C⁷, with efforts to restrict it to 1.5°C. The role the oil and gas industry will play in a low carbon economy is under question, as is how countries will secure their energy requirements. As countries consider their emission reductions and Nationally Determined Contributions, high-cost resources are likely to be the most affected.

While natural gas is recognised as a replacement for carbon-intensive fuels⁸, its primary component – methane – is, in the short term, 84 times more potent than carbon dioxide⁹. Fracking can therefore significantly contribute to greenhouse gas emissions if leakages happen during production, transportation or use. Methane leakages on the scale of those documented in a recent study¹⁰ could offset the benefits of switching from coal to natural gas and potentially limit its potential as a transition fuel in a low-carbon economy.

Policy, operational risks and community concerns have also, and will continue to, affect the development of fracking operations globally. Countries like the UK plan to develop their shale reserves via fracking, but development has been slow and is in the early stages. This is in part because of questions related to the UK's carbon budget,¹¹ as well as how to manage community opposition to fracking¹².

China's large shale reserves provide potential for the next fracking boom, but progress has been slow – their annual shale gas target of 6.5 billion cubic meters was not met; they also cut their 2020 production goal¹³. Despite the environmental risks involved, China's shale potential is seen as conducive to transitioning the economy away from coal with the help of national regulation and policy¹⁴. The IEA projects China's gas production to exceed 250 billion cubic meters by 2040 but cites challenges with geology, water availability and access rights in addition to regulatory pricing and developing supply chains¹⁵. China will need to tightly manage the local environmental and community impacts of fracking in order to maximise the benefits of transitioning away from coal.

5 US EIA (March 2016) [Hydraulic fracturing accounts for about half of current U.S. crude oil production](#)

6 US EIA (March 2016) [Hydraulically fractured wells provide two-thirds of U.S. natural gas production](#)

7 UNFCCC (2015) [The Paris Agreement](#)

8 IEA (2015) [World Energy Outlook](#)

9 The Environmental Defense Fund (EDF) [Methane: The other important greenhouse gas](#)

10 [Big Oil and Gas Emissions out West – New Report Sizes Up Methane Problem on Federal and Tribal Lands](#)

11 Committee on Climate Change (2016) [The compatibility of UK onshore petroleum with meeting the UK's carbon budgets](#)

12 In August 2016, the UK Prime Minister, Theresa May, attempted to reach out to communities by [announcing](#) households could potentially receive up to £10,000 each from the proceeds of a shale wealth fund set up in 2014.

13 Bloomberg (6 April 2016) [China's Shale Gas Reserves Jump Fivefold as Output Lags Target](#)

14 Overseas Development Institute (2015) [Can fracking green China's growth?](#)

15 IEA (2015) [World Energy Outlook](#)

WHY ENGAGE ON FRACKING?

With existing fracking operations globally and a potential surge in regions such as China, fracking remains important to investors that hold global oil and gas companies with market exposure. Investors need to be prepared to engage on the issue today and understand the potential future risks as the market and regulatory context evolves.

Fracking risks that concern investors include:

- **Operational and physical risks.** They can increase costs and impact the value of an investment. For example, fracking requires significant and continuous quantities of water, and it is harder to secure this at the right quality in areas that are experiencing water stress¹⁶. Water discharge and pollution risks also occur through wellbore and surface leaks during the transportation, storage and disposal of contaminated water.
- **The leakage of methane and other greenhouse gas emissions,** both within and outside the company's direct operations, contributes to climate change and undermines natural gas's relatively cleaner reputation when compared to coal. It can also be a loss of revenue for the company, as in some cases methane can be captured and sold rather than vented or flared. Companies may also face increasing regulations to reduce their methane emissions, potentially raising costs.
- **Reputational risk and social license to operate.** Community concerns about fracking operations often receive media attention. A company's ability to adequately respond to and manage local community concerns, including contaminated drinking water and increased noise, can affect reputational risks and the social license to operate.
- **Policy and regulation.** Companies need to be able to adapt to meet changing regulatory requirements. In 2016, the US, Canada and Mexico committed to cut methane emissions from the oil and gas sector by 40-45% compared to 2012 levels by 2025¹⁷. Other regulations may include water withdrawal limits, green completions, and disposal guidelines. Bans and

moratoriums in different countries have also limited fracking. For example:

- Scotland has imposed a moratorium on fracking while a full public consultation and research is conducted into the impacts on public health¹⁸.
- The Victorian government in Australia announced a permanent ban on the exploration and development of onshore unconventional gas, including fracking and coal seam gas, in the state¹⁹.

Taking these risks into account, and through consultation with fracking experts, the PRI Fracking Steering Committee identified four areas to engage companies operating in different jurisdictions:

- governance;
- water use and quality;
- air emissions;
- community impact and consent.

These focus areas reflect the most material risks and where companies could make a significant improvement in their performance and disclosure.

OTHER INVESTOR INITIATIVES

- **The PRI's Australian Unconventional Gas Group:** encourages best-practice management of ESG issues for coal seam and unconventional gas operations. The working group focuses on continued engagement with Australian operators in the unconventional gas sector²⁰.
- **Disclosing the Facts²¹:** the 2016 edition of this annual scorecard benchmarked the public disclosures of 28 companies on 43 fracking key performance indicators. They also coordinate together investor engagements with individual companies on their hydraulic fracturing operations.

¹⁶ Ceres (2014) [Hydraulic Fracturing & Water Stress: Water Demand by the Numbers](#)

¹⁷ Press release (March 2016): [U.S.-Canada Joint Statement on Climate, Energy, and Arctic Leadership](#)

¹⁸ FT (2015) [Scotland imposes moratorium on fracking: Latest blow to unconventional oil and gas drilling in UK](#)

¹⁹ Premier of Victoria (2016) [Victoria Bans Fracking To Protect Farmers](#)

²⁰ Further information on unconventional gas extraction in Australia can be found in an [Insight Paper by AMP Capital on Unconventional Gas Extraction: Its importance in the transition to a low carbon economy](#)

²¹ [Extracting the Facts: An Investor Guide to Disclosing Risks from Hydraulic Fracturing Operations](#) (2012) is a report published by Investor Environmental Health Network (IEHN) and the Interfaith Center on Corporate Responsibility (ICCR) with input from investors including [Green Century Capital Management](#) and [Boston Common Asset Management](#). The reporting suggestions from Extracting the Facts were distilled into the indicators used for the subsequent scorecard reports entitled [Disclosing the Facts: Transparency and Risk in Hydraulic Fracturing](#) (principal author Richard Liroff, published by [As You Sow](#) and Boston Common Asset Management). Disclosing the Facts, which has been released annually since 2013, offers good practice recommendations to companies for reporting and reducing risks and impacts from natural gas and oil operations in the US and Canada relying on fracking. These indicators in turn have periodically been updated to reflect evolving risk management issues companies face.

CASE STUDY

ENGAGING TO DISCLOSE FRACKING PRACTICES

As part of the PRI Fracking Engagement, a group of PRI investor signatories – led by Martin Currie, a UK-based investment manager – engaged with an Asian oil and gas company²². After numerous unsuccessful attempts to contact the organisation, Martin Currie found that as this was the company’s first experience of this kind of engagement, it was at first difficult to identify an appropriate interlocutor who would act as the champion for this engagement process. It was through face-to-face meetings with senior management of the company, after several months of trying, that they successfully secured a meaningful dialogue. This board-level influence was an important factor in the dialogue’s success as it motivated key staff in the company to participate.

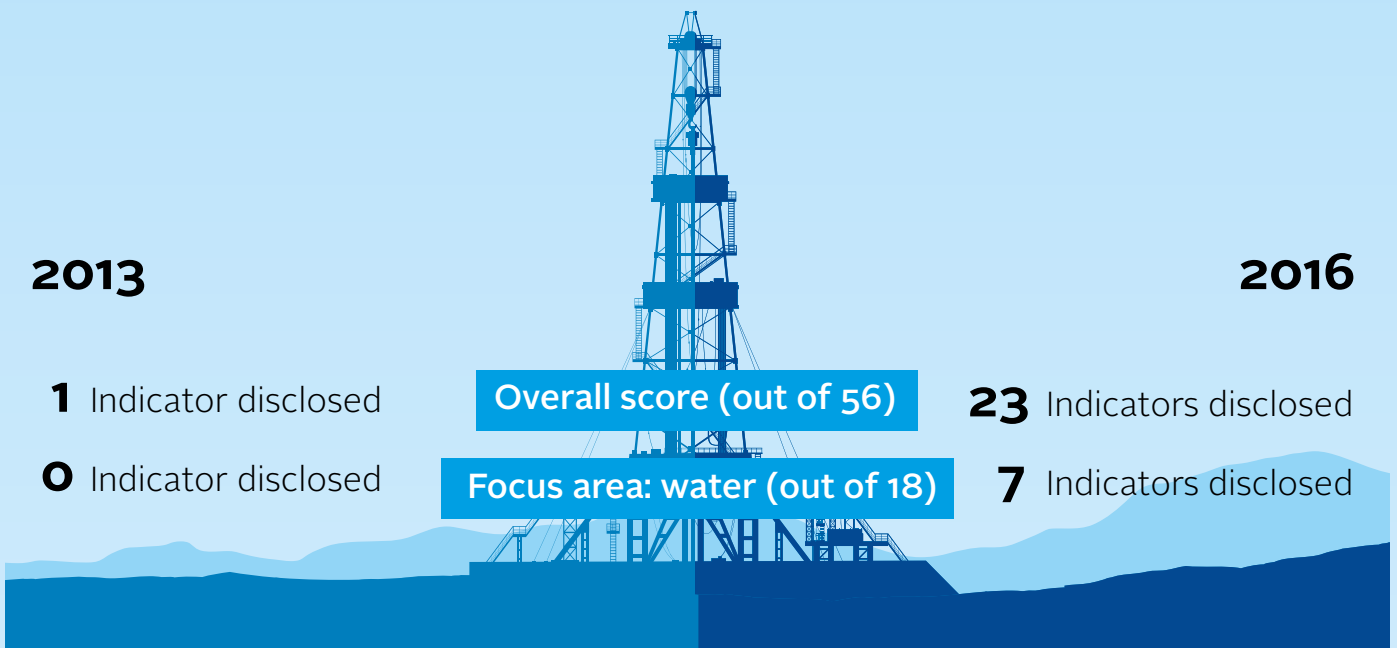
The dialogue focussed on the disclosure of fracking practices across the four key areas identified by the PRI commissioned research: governance, water, air emissions and community. The outcome was a significant improvement in the company’s disclosure against the indicators:

- Out of the 30 companies benchmarked, this company was the second highest in improving its disclosure score. In 2013, the company disclosed against only one of 56 indicators. This increased to 41% of the indicators across all four focus areas in 2016.

- Fracking was addressed in the company’s sustainability report.
- It also released its first environmental, social and governance (ESG) shale report, which addressed water, air emissions and community engagement issues.

While there was improvement in the company’s disclosure across all four focus areas, some of the most substantial disclosure was on water. This was shown in a number of ways:

- The company did not disclose any water-related information in 2013. This increased to a disclosure rate of 39% for the water metrics. It now discloses that it conducts a hydrological investigation on subsurface water before drilling and well construction takes place.
- The company reports its commitment to well integrity standards to avoid impact on and contamination of groundwater supplies. Wellbores are constructed with four layers of steel casing and cement sheathing.
- Seepage and pressure testing is conducted before a well is put into operation.
- In addition, the company now discloses that it treats flowback and produced water to reduce wastewater discharge. The company recycles 100% of wastewater. The flowback and produced water are blended with fresh water for reuse in fracking operations.



²² The company’s identity will remain anonymous to preserve the private nature of the dialogue.

CASE STUDY

CREATING A NEW MODEL FOR LONG-TERM SHAREHOLDER INTERACTION THAT ACHIEVES IMPORTANT ESG GOALS WHILE ALSO REDUCING RISKS

In 2003, when Boston Common Asset Management began its interactions with Apache Corporation, the typical company-shareholder engagement was brief: a shareholder filed a proposal for the proxy statement without notice or prior discussion, setting a confrontational tone, and companies were given only weeks or months to respond. Not surprisingly, many of the “victories” this cycle yielded were limited to small improvements in company disclosure, not substantial changes in actions.

Boston Common broke this mould by creating an action-focused, relationship-based, long-term collaboration with one company. Working alongside the PRI Fracking Steering Committee and Working Group, the co-creators of Extracting/Disclosing the Facts and fellow ESG-focused shareholders, Boston Common worked with Apache to make significant changes, measured by clear multi-year goals, in the company’s and the industry’s water, chemical, air emissions and community impact practices.

Importantly, these changes became industry-wide ones, not just company-specific ones.

Boston Common’s and Apache’s collaboration on the use of chemicals provides one example of the substantive results of this long-term, action-focused engagement.

In a few short years this collaboration has:

- started the process that led to the creation of the fracking chemical disclosure registry FracFocus, to which Apache now reports;
- led to the company’s staffing up its internal chemical expertise;
- encouraged and helped shape Apache’s programme to:
 - reduce the company’s use of the toxic chemical components of greatest concerns;
 - manage volatile organic compound emissions;
 - move to greater use of chemicals that pose less risk of bio-accumulation and that are more bio-degradable;
 - reduce truck transport of chemicals;
 - reduce the volume of toxic chemicals used per hydraulically fractured well by 60%; between 2014 and 2015 in Apache’s North American regions;
 - increase the percentage of its chemicals that are listed on the US Environmental Protection Agency’s Safer Choices Program.
- made the introductions that have led to Apache collaborating with the American Chemical Society’s Green Chemistry Institute Roundtable on greener chemicals in hydraulic fracturing.

The collaboration between Boston Common and Apache is still going strong today. The three to four personal visits that Boston Common organises each year allow an opportunity for Apache’s executives and technical experts to host meetings with other companies and investors, focusing on an individual environmental or social issue. Separate from those meetings are the two annual multi-hour, unrestricted discussions held on ESG issues by Apache’s CEO with Boston Common one-on-one and later with a group of many of Apache’s active shareholders. We believe all of these opportunities have helped Apache and the investor community better understand each other and the challenges facing each industry.

PRIOR TO ENGAGING

Prior to engaging, investors should establish the company's starting point and consider its operating environment. They should:

- Identify a company's exposure to factors that could restrict fracking activities. Is it in a position to engage on fracking at all? For example, some companies may have recently scaled back their shale operations because of the low oil price.
- Research the company to identify gaps in disclosure and practices and operational risks.
- Use the gap analysis to prioritise appropriate questions under relevant focus areas.
- Identify feasible next steps to be agreed with the company.
- Prepare for challenges regarding any cost cutting, high staff turnover, increasing regulation, changing priorities and reputational pressures.

A note on service providers

When engaging with service providers, consider the specific role they play in the fracking operation concerned and the expertise they deliver. A service provider's responsibility and accountability will vary and depend on the operation process, its location, and relevant regulation.

Investors should be aware that service providers may not be required to implement all indicators as some will not be in their remit. However, service providers should commit to operating responsibly and increasing their transparency. In addition to meeting the producing company's requirements and standards, service providers have a role in adopting and disseminating current best practices as part of the operations for which they are responsible.

FOCUS AREA:

GOVERNANCE

OVERVIEW

Good corporate governance is indicative of a responsible, transparent and accountable company, and allows risks to be correctly identified, managed and reported. It also enables the identification of opportunities and the rollout of current best practice.

Without effective board and senior management oversight of sustainability issues related to fracking, the company may not recognise and mitigate all the material risks related to its operations.

ENGAGEMENT QUESTIONS

1. **Does the company have appropriate governance arrangements in place on fracking practices?**
 - **Basic expectation:** the company has an independent policy statement on sustainability and fracking where exposure to shale is significant. This statement should reflect the company's recognition of the risks associated with fracking operations and the intent to monitor and manage them.
 - **Follow up questions:**
 - Is there a senior executive or committee reporting directly to the Board who is accountable and has oversight of environmental and social impacts of fracking across the company's portfolio?
 - Is senior executive compensation linked to sustainability metrics such as air emissions and freshwater withdrawal reduction targets?
2. **How does the company manage fracking-related risks?**
 - **Basic expectation:** the company identifies and reports on ESG risks specifically related to fracking through the company's sustainability reporting or 10-K filings, for example.
 - **Follow up questions:**
 - Is the company setting goals related to fracking-specific risks and monitoring the progress to achieve these? For example, a company may set a goal to reduce methane emissions by 45% within a specified time.
 - Is the company using independent third party standards such as ISO or the AA1000?

3. **Does the company report legal infractions and controversies?**

- **Basic expectation:** the company acknowledges/reports legal infractions and controversies related to fracking.
- **Follow up questions:**
 - What is the nature of the infraction(s)?
 - What is the company's risk exposure (financial or other) related to this?

4. **Does the company pursue technology and innovation related to fracking?**

- **Basic expectation:** the company is able to describe the investment and deployment of the best available technology (BAT) in addition to maintaining a policy to use BAT for fracking.
- **Follow up questions:**
 - Can the company explain the return on investment from best practice research and development so that investors can understand the effectiveness and impact of the investment?

COMPANY EXAMPLES OF GOOD PRACTICE

Southwestern: setting goals and monitoring performance

Southwestern has set goals regarding freshwater and methane emissions, and monitored progress in relation to these goals. Through their Energy Conserving Water (ECH₂O®) initiative, Southwestern is aiming to be freshwater neutral company-wide by the end of 2016. Their Fayetteville Shale play achieved freshwater neutrality in 2015.

Southwestern set a target (in alignment to its membership in the ONE Future Coalition²³) to keep methane leak/loss rate below 0.36% of production across the full natural gas value chain. In 2015, the company achieved a rate of 0.184%.

²³ The ONE (Our Nation's Energy) Future Coalition is a coalition of oil and gas companies, pipeline operators and gas utilities with operations across the full natural gas value chain.

FOCUS AREA:

WATER USE AND QUALITY

OVERVIEW

An abundant and continuous supply of water is essential to reducing the risks to operational production and the company's reputation. Where a company is operating in a water-stressed region, the impacts of freshwater use are particularly high if not managed appropriately. Therefore a company needs to understand the catchment within which it operates to assess water availability and the impact on local resources. In addition to engaging with other water users in the area, the company should conduct a baseline water assessment and monitor this periodically.

Apart from water availability, water quality and pollution from fracking operations need to be mitigated and minimised. Water is used in numerous parts of the fracking process²⁴:

- It is required for the fracking fluid, which contains various chemicals and a proppant (usually sand) to create fissures in the rock. Freshwater is often used to prevent introducing other debris and components. Some of the chemicals used in the fluid are toxic so reducing the use of or eliminating harmful chemicals is encouraged.
- The nature of the process requires a wellbore to be drilled through shale rock thousands of metres into the ground. The construction and integrity of the well is fundamental to isolating it from groundwater sources to avoid contamination by the chemicals used in the fracturing fluid.
- A combination of natural gas, chemicals from the fracking fluid and water naturally found in the rock formation flows up the well and is stored on site in tanks or lined pits. This wastewater is transported to be treated, recycled or disposed of by the company. There is risk of surface spills and leaks if the company does not manage it correctly during these processes, risking contamination to the hydrological cycle in the region.

ENGAGEMENT QUESTIONS

1. Does the company report on water used²⁵?

- **Basic expectation:** the company publicly commits to and details efforts to reduce freshwater use such as setting quantitative targets and providing a qualitative explanation of their recycling, reuse or treatment practices.
- **Follow up questions:**
 - What percentage of fracking operations are in water-stressed regions?
 - Has the company assessed its water requirements for fracking operations in water stressed regions now and in the future? What are the financial implications, including on Capex and revenue?
 - Does the company disclose a water efficiency metric? This may be a water use efficiency metric or a combination of data on water consumption, withdrawals, recycling and discharge.
 - What is the impact of the company's fracking-related water extraction on access to water? Has the company conducted a third party verified baseline of water availability by area?
 - Does the company participate in regional or cumulative efforts to address local water availability²⁶?

2. What is the company's approach to toxic chemicals use?

- **Basic expectation:** the company reports the chemicals used in fracking operations on registries such as FracFocus²⁷.
- **Follow up questions:**
 - Does the company pursue benign alternative chemicals and processes?
 - Are the most harmful additives such as diesel being eliminated from the processes?
 - Has the company set time-bound targets to eliminate harmful additives?

²⁴ See US EPA [Hydraulic Fracturing Water Cycle](#)

²⁵ See additional questions in the [Ceres Investor Guide on Fracking Water Use and Disposal Issues](#)

²⁶ For more information on cumulative efforts, see the CEO Water Mandate's [Guide to Water-Related Collective Action](#)

²⁷ [FracFocus](#) is a US and Canadian chemical disclosure registry where companies voluntarily submit data on the chemicals used during the process of fracking of oil or gas wells. This information is stored on a central website and is accessible to the public and industry.

3. How does the company ensure well integrity?

- **Basic expectation:** the company publicly commits to implementing well integrity standards to avoid the leakage of chemicals, liquids and gas²⁸.
- **Follow up questions:**
 - Do the well integrity standards go beyond regulatory requirements? Note that regulatory standards can vary between regions²⁹.
 - Does the company report on well integrity practices? For example, does the company conduct pressure testing and casing and cement evaluations?

4. How does the company manage water flowback or produced water³⁰?

- **Basic expectation:** the company adopts recycling of flowback water to reduce the requirement of freshwater use, wastewater disposal and the associated costs.
- **Follow up questions:**
 - Does the company report flowback recycling as a quantitative metric?
 - How does the company store flowback water? It is best practice to use closed tanks instead of open pits in certain situations.
 - Does the company disclose flowback treatment practices?

5. Does the company monitor and report water quality?

- **Basic expectation:** the company has specific fracking-related water testing practices pre-drilling and post-drilling so a baseline can be established.
- **Follow up questions:**
 - Does the company report on the water testing results to relevant stakeholders?
 - Does the company publicly report water monitoring efforts by region or project?

COMPANY EXAMPLES OF GOOD PRACTICE

EOG Resources: monitoring and reporting on water quality

At the Marcellus shale, EOG conducts pre-drilling baseline sampling of private water wells and water resources used for agriculture and livestock within a 2,500-foot radius of all wells. They have also established a baseline water sampling programme in all of its US divisions.

In 2012, the Colorado Department of Natural Resources and the Colorado Oil and Gas Association launched a groundwater quality sampling programme, in which EOG voluntarily participated. The programme required operators to collect groundwater samples before and after drilling new wells, and to report the data to the Colorado Oil and Gas Conservation Commission. This then makes the information publicly available.

ConocoPhillips commits to well integrity standards

ConocoPhillips designs and constructs new wells with multiple layers of steel casing and cement, containment and barriers in order to prevent leakages and spills into freshwater resources. The pressure during drilling and completion is closely monitored, and air or freshwater-based fluids are used to prevent water contamination in freshwater zones. In addition, recovered fracking fluids are stored in tanks or lined pits as per government regulation.

²⁸ Many experts on fracking view proper construction of the well to be fundamental in ensuring well integrity and reducing ground water contamination from fracking activities.

²⁹ Regulation can vary between states and provinces. See Groundwater Protection Council (2014) [State oil & gas regulations designed to protect water resources](#)

³⁰ 'Flowback water' is the water-based solution that flows back to the surface during and immediately after a well is fractured. It consists of the fluid used to fracture the shale in addition to naturally-occurring water present in the formation. 'Produced water' is naturally-occurring water found in shale formations that flows to the surface throughout the life of the well.

FOCUS AREA:

GREENHOUSE GASES AND OTHER AIR EMISSIONS

OVERVIEW

Greenhouse gas emissions are released at various stages in the fracking process including drilling, fracking operations and transportation. While greenhouse gases are often the primary focus, air pollutants like volatile organic compounds and hazardous air pollutants can also be emitted simultaneously and have a detrimental effect on local air quality.

Particular attention is being paid to methane as a greenhouse gas because of its potential to exacerbate climate change if released into the atmosphere directly. Methane leaks can occur during the entire natural gas supply chain and, in some cases, is a lost revenue source if not captured. Where gas is flared, this generates carbon dioxide and contributes to the company's emissions. Poor management of methane can lead to reputational risk given its potential role as a transition fuel to a low-carbon economy. With many governments implementing climate policies, companies can be exposed to regulatory changes and need to demonstrate through transparent reporting how they adapt.

ENGAGEMENT QUESTIONS

- Is the company monitoring air emissions from fracking?**
 - Basic expectation:** the company publicly reports on air emissions including greenhouse gases emissions and volatile organic compounds.
 - Follow up questions:**
 - How is the company measuring, reporting and reducing methane emissions³¹?
 - Does the company have a Leak Detection and Repair (LDAR) programme to control fugitive emissions?
 - Has the company set emission reduction goals and is it monitoring and disclosing the progress to achieve this?
- Does the company use energy alternatives?**
 - Basic expectation:** the company has a strategy to find alternative, less-polluting fuel sources³² for drilling and completion operations and lists the alternative fuel sources they use.

- Follow up question:**
 - Does the company disclose the reduced air emissions from the use of alternative fuels?
- Has the company implemented green completion³³ policies?**
 - Basic expectation:** the company has a stated policy on green completions or acknowledges compliance with the US EPA regulation³⁴.
 - Follow up question:**
 - Does the company disclose the reduced air emissions from the use of alternative fuels?

COMPANY EXAMPLES OF GOOD PRACTICE

Anadarko uses natural gas as an alternative energy resource for drilling

Anadarko has piloted and implemented the use of natural gas for certain processes. One pilot was conducted in 2013 at the Stim Center III. It attempted to use natural gas instead of diesel to power surface pumping equipment. Liquefied natural gas was used to power 70% of the pumping fleet and eliminated 11,250 gallons of diesel fuel and 60,000 lbs of Co2 emissions.

In 2014, a dual fuel approach (using diesel and natural gas) was adopted as standard practice at the Stim Center IV, saving 5.4 million lbs of Co2 emissions from more than one million gallons of diesel fuel, which was subsequently not used.

Statoil sets air emission reduction goals and monitors progress

Statoil recognises their potential contribution to greenhouse gases. They have established a 2020 carbon intensity target of 9kg Co2 per barrel of oil equivalent for their upstream activities. The company reported progress in meeting this target, which has so far improved to 10kg Co2 per barrel of oil equivalent. In 2015, Statoil also set a target to save 330,000 tonnes of Co2 per year and increased this by a further 220,000 tonnes of Co2 per year in 2016. So far, the company has accounted for saving 550,000 tonnes of Co2 per year through various energy efficiency initiatives such as reducing methane emissions, eliminating routing flaring and scaling up carbon capture and storage.

In 2012, Statoil announced a 2020 flaring intensity target of two tonnes of gas flared per 1,000 tonnes of hydrocarbons produced. The company has set an additional target of bringing down continuous production flaring to zero by 2030.

³¹ For further information and guidance on engaging on methane emissions see [EDF \(2016\) Rising Risks: Methane disclosure by US oil and gas companies](#) and [PRI/EDF \(2016\) An investor's guide to methane](#)

³² Such as the use of dual fuel and liquefied natural gas.

³³ See IPIECA explanation of [Green Completions](#)

³⁴ US Environmental Protection Agency (2012) [Air Rules for Oil and Natural Gas Industry](#)

FOCUS AREA:

COMMUNITY IMPACT AND CONSULTATION

OVERVIEW

Local communities can experience negative environmental and social impacts from fracking, which can result in reputational risks and affect a company's social license to operate. Issues such as water, noise and air pollution, as well as increased traffic and impact on local infrastructure, are all key concerns communities may have. Community conflict can result in costs to the company financially through lost productivity and resources to address the conflict³⁵.

Companies can go beyond minimum regulatory requirements to implement a higher standard, and practice where possible. This will help to manage stakeholder relations effectively and take into account the interests of local communities.

Even if risks are managed by the company, constructive and open dialogue still needs to be undertaken in order to consult with, raise awareness, listen and respond to the concerns of the local community and other stakeholders. A company needs to demonstrate appropriate channels and mechanisms are available to ensure stakeholders are informed and can communicate all issues with the company.

ENGAGEMENT QUESTIONS

1. **Does the company identify benefit sharing and economic impacts?**
 - **Basic expectation:** the company has committed to implement Community Development Agreements (or similar) at their projects.
 - **Follow up questions:**
 - Does the company provide employment opportunities and hire employees from the local area at the operation site?
 - Can the company demonstrate sustainable economic development at its projects through using and building capacity of local supply chains and businesses?

2. **Does the company undertake community consultation?**
 - **Basic expectation:** the company has a policy which commits to stakeholder engagement in the planning and implementation of projects.
 - **Follow up questions:**
 - Is there a policy and what actions is the company taking to consult with stakeholders in general?
 - Is there a policy to seek free, prior and informed consent (FPIC)³⁶ for companies that are exposed to indigenous peoples populations?
 - If the company experiences conflict around land use planning and boundaries, does the company act beyond state regulations and local zoning codes?
3. **What fracking-related grievance mechanisms does the company have?**
 - **Basic expectation:** the company has a policy commitment to maintain an active grievance or complaints mechanism.
 - **Follow up questions:**
 - How does the company track performance to address how the complaints and grievances are resolved, monitored and recorded? The grievance mechanism should have a recourse to an independent organisation.
 - Is the company reporting publicly on the use and effectiveness of these grievance mechanisms?

COMPANY EXAMPLES OF GOOD PRACTICE

BHP Billiton implements grievance mechanisms

BHP Billiton set up a community complaints and grievances process in each shale play. Each complaint is acknowledged and tracked through the global SAP database system. The system aggregates the complaints which are reported weekly to the leadership team. The company reports on two mechanisms available for communities and other stakeholders to register their complaints:

- A hotline service available to stakeholders across shale plays, which directs to a resource desk located in Houston.
- 'EthicsPoint', a worldwide 24-hour multilingual business conduct hotline and online management system, used by internal and external stakeholders, which is managed by an independent third party.

³⁵ Davis and Franks (2014) [Costs of Company-Community Conflict in the Extractive Sector](#)

³⁶ As per the IFC [Performance Standard 7](#) (2012) on Indigenous Peoples. More information on FPIC can be found in the [Corporate Human Rights Benchmark](#) (CHRB) on page 108: D.3.5 Indigenous peoples rights and free prior and informed consent (FPIC).

RECOMMENDATIONS FOR FUTURE ENGAGEMENT

PRI research³⁷ and evidence from the *Disclosing the Facts* report³⁸, have identified that companies are gradually improving their disclosure on fracking practices. However, several areas require improvement – areas which would greatly benefit from future investor engagement.

1. ENCOURAGE COMPANIES TO REDUCE AND REPORT ON THEIR METHANE EMISSIONS

Methane emissions are being increasingly scrutinised and companies need to be prepared for further regulation. A report³⁹ by the Environmental Defense Fund (EDF) found that few oil and gas companies were disclosing their methane emissions, making it difficult for investors to assess the company's performance and risk management of methane.

The fracking engagement results also highlighted that 12 of the 30 companies benchmarked (40%) reported on their methane emissions in 2016 – an increase from seven in 2013. Many companies report on venting and flaring only, but this does not take into account all sources of methane and therefore is not a true reflection of a company's methane emissions overall. Twelve companies reported beyond venting and flaring and disclosed actual methane emissions.

EDF recommends companies report against four metrics to demonstrate how they are measuring and reducing methane emissions:

- Methane emission rate: the volume of methane emissions expressed as a percentage of gas production or throughput.
- Methane emission reduction targets: the amount and timeline of intended emissions reductions (absolute or intensity based).
- Leakage detection and repair (LDAR) protocol: the methodology, scope and frequency of a company's LDAR programme allows investors to ensure best practice.
- Company position on the role of public policy to reduce methane emissions.

Further guidance on how to engage on this topic can be found in [An investor's guide to methane: engaging with oil and gas companies to manage a rising risk](#), developed by the PRI and EDF.

2. ENCOURAGE COMPANIES TO CONTINUE TO ENGAGE WITH STAKEHOLDERS AND IMPLEMENT GRIEVANCE MECHANISMS

While many companies have policies or commitments to engage with stakeholders, investors should encourage them to have a policy to maintain an active grievance or complaints mechanism. This helps increase the company's transparency and accountability with the community.

The PRI 2016 benchmarking study identified 17 companies – or 57% – committed to maintaining an active grievance or complaints mechanism. However, only 23% disclose that their grievance processes are operated by an independent third party and only 13% quantitatively report on grievances received and addressed.

Investors can ask companies about how complaints are recorded, monitored, and resolved. This should then be publicly reported. Recourse to an independent organisation shows the willingness of the company to resolve all complaints in a fair and thorough manner.

The PRI Fracking Working Group found that 73% of companies demonstrated engagement with stakeholders but only 13% disclose a policy statement to seek free, prior and informed consent from indigenous peoples. Companies should be encouraged to continue to consult and engage with stakeholders to reduce reputational risks. Consultation, education, listening and responding to community concerns reduces the risk of protests and negative media attention. Not only can building relationships with stakeholders facilitate their understanding of the operation, but the company can also learn of concerns and manage the impacts appropriately, reporting back to the community.

³⁷ Refer to Appendix for engagement outcomes

³⁸ An [annual report](#) prepared by Investor Environmental Health Network (IEHN), As You Sow and Boston Common Asset Management. See Appendix A for further information.

³⁹ [EDF Rising Risks: Methane disclosure by US oil and gas companies](#)

3. ENCOURAGE COMPANIES TO MONITOR AND REPORT ON WATER AVAILABILITY AND QUALITY

Companies are increasingly operating in areas of high water stress. Ceres found that 57% of the 110,000 wells in the US that were fracked in the past five years were located in regions with high or extremely high water stress⁴⁰.

Where companies operate in areas that are arid or where there is high competition for water, there is a potential risk to water availability and changing regulations. A company needs to be able to assess water requirements for current and future production, physical water availability and the company's potential impact in the catchment within which they operate. In addition to this, a company should identify the potential impacts of water stress on the operation and the effects on costs or revenues for the company.

Companies have made progress in managing water use and quality but are currently falling short in monitoring water resources and publicly reporting the results by region or project. The PRI investor group found that:

- 58% of producers disclose fracking-related water testing practices.
- Less than half of these companies (23%) publicly report results from fracking-related water testing.
- Very few of these companies report results at a regional or project level.
- No service providers report water testing results.

Testing water quality is essential to ensure that water resources are not compromised unintentionally and can be conducted at different points around a specified radius of the operation. This may include testing on other landowners' property, in which case, permission and consultation should be sought.

Publicly reporting the results and sharing these with other water users and local stakeholders helps alleviate fears of water pollution. Where appropriate, participatory monitoring schemes can be implemented whereby local communities are involved in the water monitoring process to ensure transparency and trust.⁴¹ Companies should be encouraged to monitor local water resources before the operation commences in order to establish a baseline. This can then be used as a comparison for the results of monitoring throughout the operation.

⁴⁰ Ceres 2016 [Investor Guide to Hydraulic Fracturing and Water Stress](#)

⁴¹ IFC Office of the Compliance Advisor/Ombudsman (2008) [Participatory Water Monitoring: A guide for preventing and managing conflict](#)

APPENDIX A: PRI-COORDINATED COLLABORATIVE ENGAGEMENT – CHALLENGES AND RESULTS

CHALLENGES FACED BY INVESTORS DURING ENGAGEMENT

During the engagement period the oil and gas operating environment changed rapidly. Maintaining a focussed dialogue with the companies during this period was made difficult by:

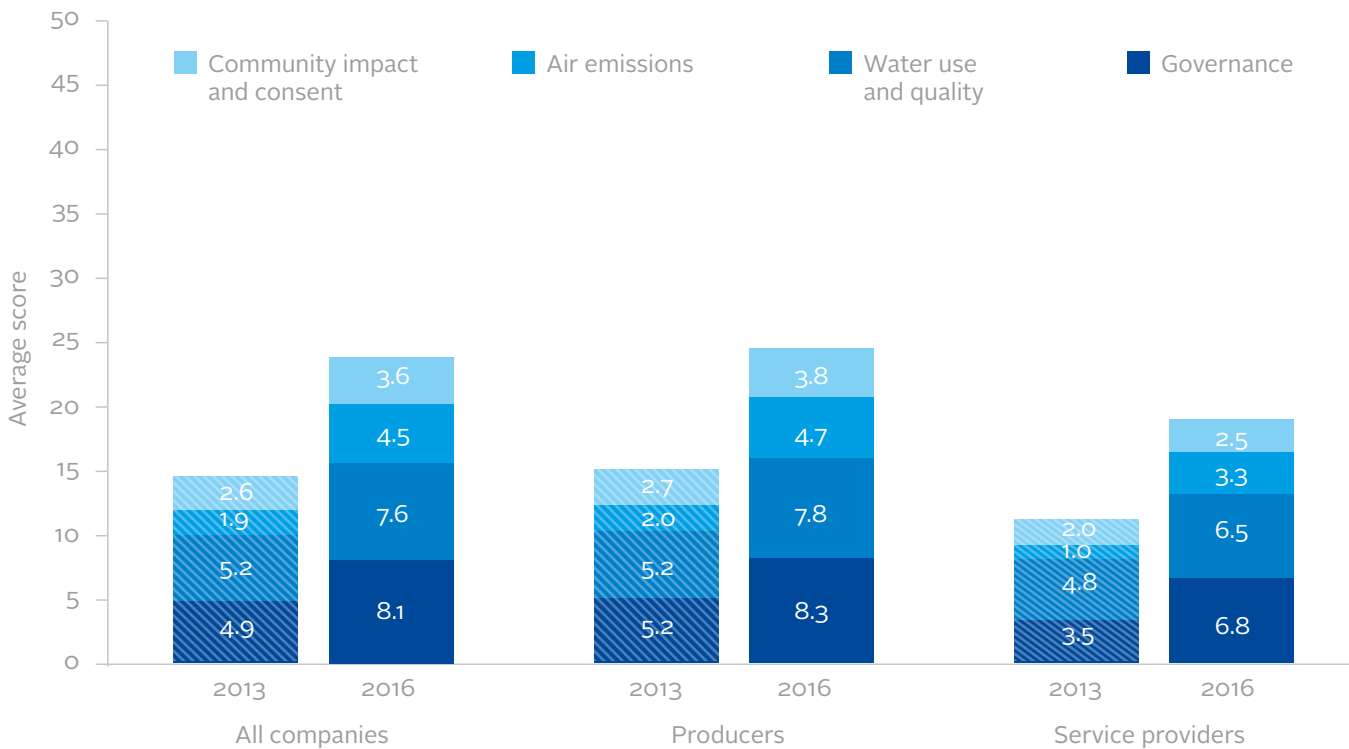
- the changing oil price;
- mergers and acquisitions;
- anti-corruption investigations;
- cost-cutting measures;

- internal changes to company staff and staff reductions;
- capacity to engage with investors;
- changing exposure to shale operations.

The priority and attention of the oil and gas sector also shifted to issues such as Arctic exploration and stranded assets, which made interacting with some of the companies on the issue of fracking difficult.

Because of these challenges, seven of the dialogues were not pursued and the Working Group continued to engage with the remaining 30 companies.

Average company performance: 2013 vs 2016



RESULTS OF THE ENGAGEMENT BY OBJECTIVE

Objective 1: Better understand companies' ability to identify, manage and reduce fracking related risks and capacity to improve practices and disclosure.

- The development of the 56 metrics within four focus areas provided a framework to understand fracking-related risks.
- Two disclosure benchmarks (in 2013 and 2016) on fracking practices informed investors on the companies' policies, commitments, implementation and management practices around fracking-related risks.

Objective 2: Achieve enhanced disclosure of policies, management systems and reporting related to fracking operations by companies.

- Based on the 30 companies that were benchmarked in 2016, 26 companies (87%) improved their disclosure of fracking-related policies, practices and management systems. This is despite the volatile changes in pricing that the industry has experienced, which could have slowed efforts in disclosure.
- The most improved company increased its disclosure score by 47%⁴³.
- Metrics that 80% or more of companies are reporting on include: recognition or full incorporation of fracking in their sustainability policies; recycling of flowback and/or produced water; and a commitment to well integrity standards.

Objective 3: Enable investors to better assess and manage their exposure to the financial, operational and reputational impacts of the risks related to fracking in their portfolios.

- Through engagement with the companies, and using the extensive indicator framework and 2013 benchmark data as a basis for the dialogues, investors have been able to identify the gaps in company policy, practice and management of fracking-related risks. Subsequently, investor-company discussions that have taken place have explored the gaps, challenges and opportunities to reduce financial, operational and reputational risks for both the company and investor.
- The results of the 2016 benchmark will facilitate future investor engagement with the companies and highlight the areas where companies are still exposed:
 - disclosure and measurement of methane emissions;

- committing to community consultation and implementation of grievance mechanisms;
- monitoring and reporting on water quality.

GENERAL FINDINGS

- **More companies are now offering fracking-specific disclosures.** Nearly all of the target companies exposed to shale acknowledge risks related to fracking, and many offer more comprehensive reporting of their management of fracking-related risks.
- **Production companies continue to score better than service providers.** The diverging performance reflects differences in business models and operations, making some indicators less relevant to service providers. Furthermore, public and regulatory pressure on producing companies requires compliance and improvements by the operator.
- **Companies do not disclose data in a standardised format.** In response to the lack of regulatory requirements for disclosure, several voluntary reporting frameworks (both specific and not specific to fracking) have emerged including:
 - CDP's⁴⁴ Carbon and Water surveys;
 - the FracFocus⁴⁵ chemicals registry;
 - sustainability reporting frameworks from API⁴⁶, IPIECA⁴⁷ and the GRI⁴⁸;
 - Extracting the Facts: An Investor Guide to Disclosing Risks from Hydraulic Fracturing Operations.
 - Investors are therefore required to consult different sources and distil the relevant information.
- **Companies continue to score best in the area of governance and worst in air emissions.** In 2013, companies addressed 33% of governance metrics and 14% of air emissions metrics. In 2016, companies addressed 54% and 35% respectively. Only 40% of companies report their methane emissions in some form despite methane emissions being one of the top environmental concerns levelled against fracking. Many more companies now disclose air emissions reduction targets, but very few report efforts to monitor ambient air quality monitoring.

⁴³ This company scored a total of 13 out of a possible 56 points (23%) in the 2013 benchmark and improved their disclosure to score 39 (70%) in 2016.

⁴⁴ CDP requests standardised climate change, water and forest data from globally listed companies through annual questionnaires sent on behalf of institutional investors.

⁴⁵ FracFocus is the US and Canadian hydraulic fracturing chemical registry.

⁴⁶ The American Petroleum Institute (API) is a US trade association representing the oil and natural gas industry with 650 corporate members.

⁴⁷ IPIECA is the global oil and gas industry association for environmental and social issues.

⁴⁸ GRI provides consistent global standards on sustainability reporting and disclosure.

RESULTS BY FOCUS AREA

GOVERNANCE

Companies scored highest in governance, receiving an average of 8.1 of 15 points (54%). This was the case for both production and servicing sectors. In 2013, companies scored an average of 4.9 points (33%).

Corporate governance of fracking practices: this was the highest scoring indicator for producers. 90% of producers and 50% of service providers officially recognise fracking in their sustainability policies. This highlights increasing acknowledgment by corporations, especially among producing companies, of environmental risks.

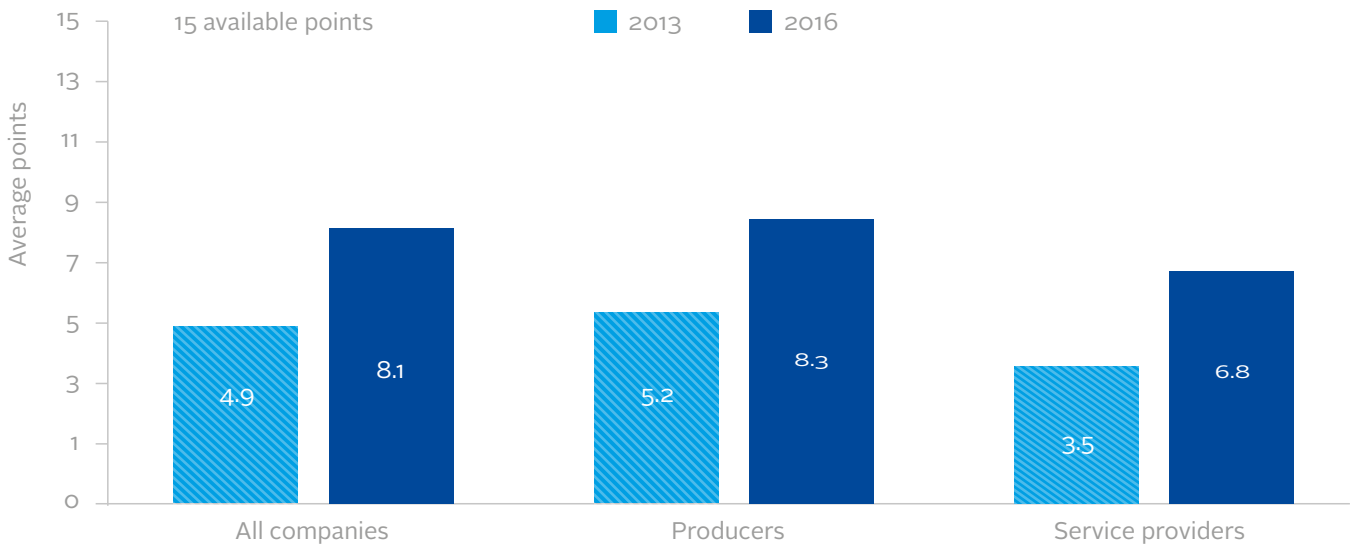
Enterprise risk management procedures: this is an area where companies offered limited evidence of integrating fracking risks. 43% of companies reference fracking-related issues in their CEO letters to shareholders, a low figure which could be explained by a turbulence in the industry and other issues. 23% base their ESG risk assessment on a third-party standard such as ISO; 57% communicate goals for the mitigation of fracking-related risks.

Promoting current best practices: companies have significantly improved their reporting in this area, with 73% of them now disclosing specific guidelines for fracking practices. Nevertheless, only 10% of companies track and report their performance in relation to them.

Technology and innovation related to fracking: 80% of companies now describe their investment and deployment of best-available technologies (BAT) for fracking. Yet only 50% of companies have developed policy commitments to utilise BAT, and no companies report on the return on investment from BAT research and development.

Reporting legal violations and controversies: While 58% of producers report legal infractions and controversies related to fracking, only 25% of service providers do the same. The US Securities and Exchange Commission (SEC) requires firms to report violations resulting in fines over US\$100,000. It is unclear whether non-reporting firms avoided violations or incurred fines below the SEC threshold.

Average governance performance: 2013 vs 2016



WATER QUALITY AND USE

Companies scored an average of 7.6 of 18 points (42%), up from an average of 5.2 points (29%) in 2013.

Water quality monitoring and reporting: companies scored very low on this indicator. While 58% of producers disclose fracking-related water testing practices, only 23% publicly report results from water testing, and very few companies report results at the region or project level. No service company reports on this.

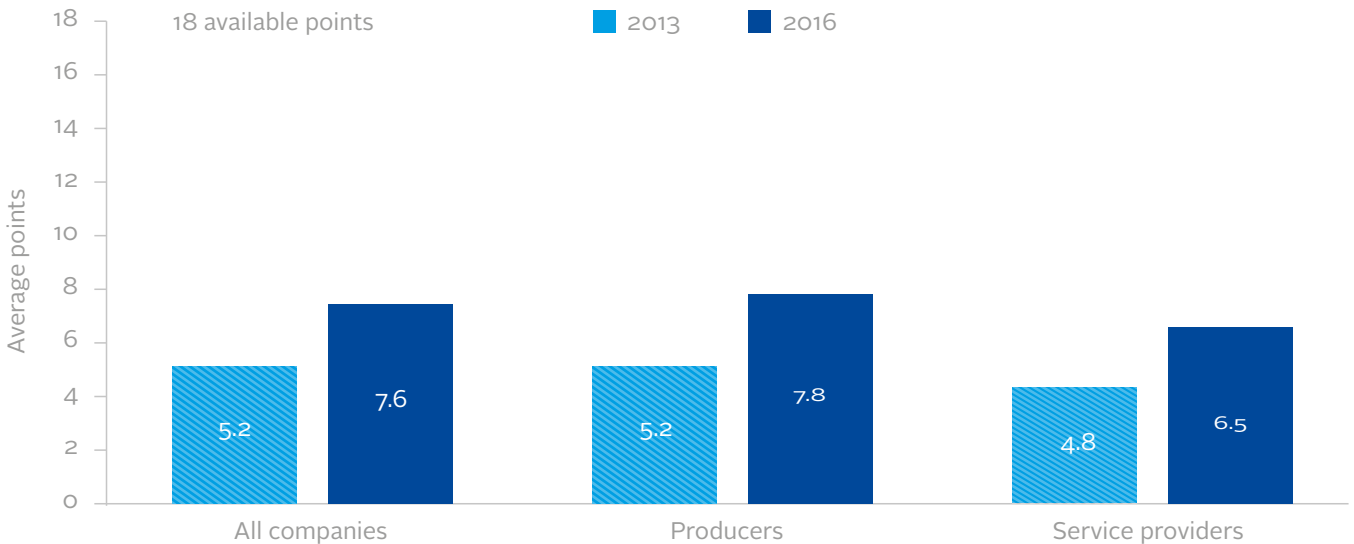
Water flowback treatment: 80% of companies now recycle flowback and/or produced water, including 75% of service companies. 47% of companies now provide quantitative reporting of their flowback recycling. 31% of producers and 75% of service companies describe their flowback treatment practices. While 43% disclose storing at least some flowback water in tanks, no company provides quantitative reporting of its tank use.

Toxic chemical use: nearly all companies continue to report to chemical registries such as FracFocus. 47% now commit to finding more environmentally-friendly chemicals for use in fracking fluids. Nevertheless, no company discloses a public risk profile of fracking chemicals. However, a few companies did report they have developed such a risk profile for internal use.

Water used for fracking-related processes: 88% of producers and 75% of service companies now commit to or demonstrate efforts to reduce water use. 54% of producers and 25% of service companies now report their water use efficiency, or at the very least report water metrics that allow their water use efficiency to be calculated. No company disclosed using a third-party verified baseline of available water to assess the impact of fracking-related water extraction on local access to water.

Well integrity: 90% of companies now commit to well integrity standards, up from just 37% in 2013. While most (73%) also report specific well integrity practices, such as pressure testing, few (27%) publicly commit to well integrity standards that exceed regulatory requirements.

Average water quality and use performance: 2013 vs 2016



AIR EMISSIONS

Disclosures of air emissions were the most limited of all four focus areas. This is true for both producers and service providers. Nevertheless, disclosures in the area did increase, from an average score of 1.9 of 13 points (14%) in 2013 to 4.5 points (35%) in 2016.

Monitoring and reducing air emissions from fracking:

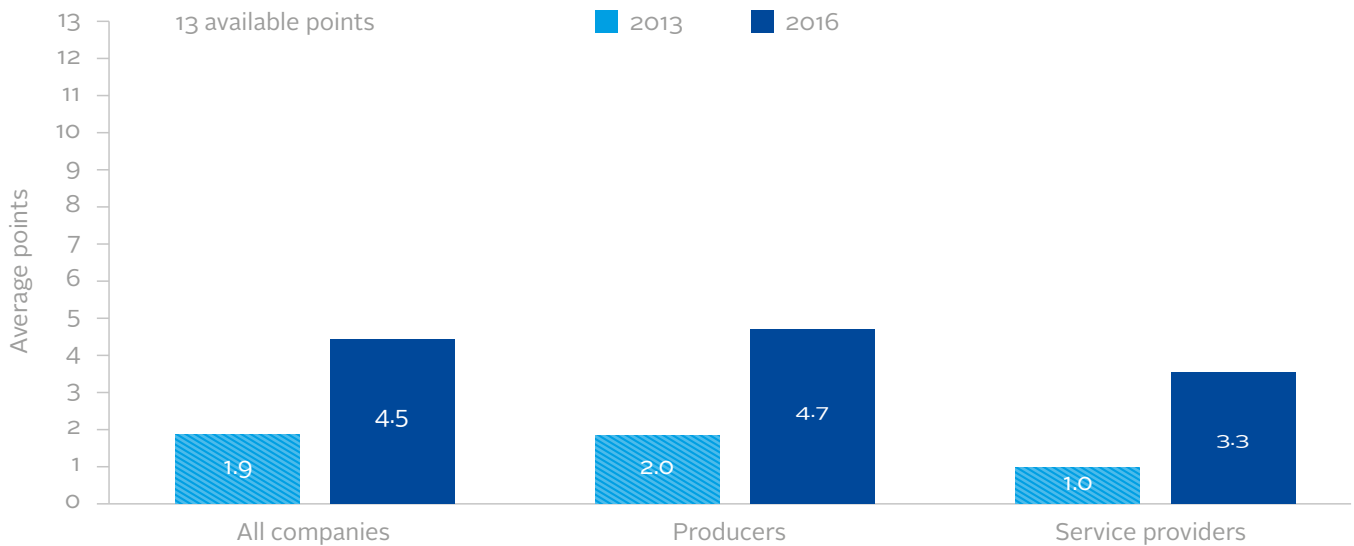
80% of companies now disclose their greenhouse gas emissions, excluding methane, in some form. Unlike in 2013, we did not find a noticeable difference in reporting between producers and service providers. Nevertheless, we do see differentiation in relation to methane emissions reporting: while 46% of producers report on them, no service company does. 40% of companies now disclose air emissions reduction goals.

Ambient air quality monitoring: consistent with 2013, companies disclose very limited evidence of ambient air quality monitoring: only 15% of producers and no service companies disclosed this.

Energy alternatives and efficiency: 70% of companies – 73% of producers and 50% of service providers – use alternative fuel sources such as natural gas instead of diesel for drilling and/or completion operations. Yet only 20% report air emissions reductions from the use of alternative fuels.

Green completion practices: 60% of companies – with 65% of producers and 25% of service providers – report utilising green completions. Many companies reference the US Environmental Protection Agency (EPA) requirement for green completion of all wells beginning 1 January 2015. Nevertheless, 10% of companies disclose targets, and only 7% report air emissions reductions from the utilisation of green completions.

Average air emissions performance: 2013 vs 2016



COMMUNITY IMPACT AND ENGAGEMENT

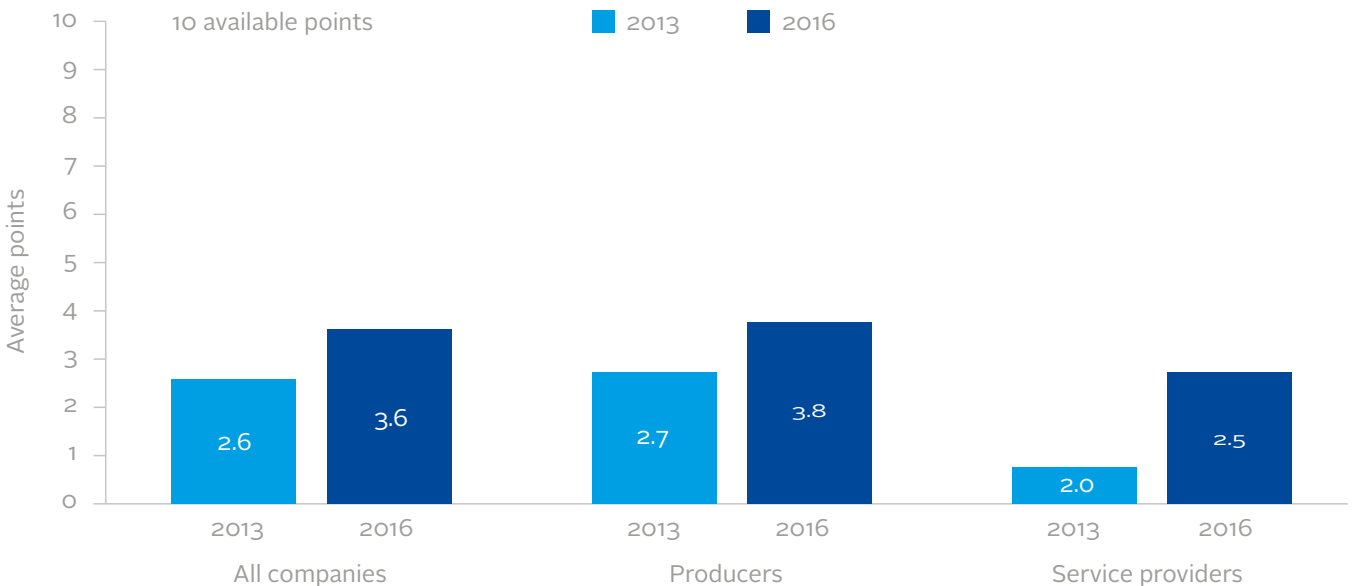
Companies scored an average of 3.6 of 10 points (36%), up from an average of 2.6 points (26%) in 2013.

Community consultation and consent: while 81% of producers demonstrate engagement with stakeholders in the planning and implementation of ESG aspects of projects, only 25% of service providers do the same. Only 15% of producers, and not one service provider, communicate a commitment to win consent for fracking activities from project stakeholders. Four companies now commit to seek FPIC in the context of engagement with indigenous populations. This is certainly an area for improvement.

Grievance mechanisms: producers again outperform service companies on this indicator. While 57% of producers commit to maintain an active grievance mechanism, only 25% of service providers do the same. Nevertheless, consistent with 2013, few companies (13%) quantitatively report the grievances received and addressed. No company discloses the presence of a grievance mechanism that has recourse to an independent ombudsman.

Benefit sharing and economic impact: both producers and service companies perform well on this indicator. 70% of companies disclose commitments to hire locally and invest in local supply chains. 50% of companies communicate commitments to implement community development agreements or otherwise demonstrate strategic investments in this.

Average community impact and engagement performance: 2013 vs 2016



APPENDIX B – KEY RESOURCES

AMP Capital (2015)

[Unconventional Gas Extraction: Its importance in the transition to a low carbon economy](#)

As you Sow, Boston Common and IEHN (2016)

[Disclosing the Facts: Transparency and Risk in Hydraulic Fracturing](#)

Ceres (2014)

[Hydraulic Fracturing & Water Stress: Water Demand by the Numbers](#)

Ceres (2016)

[An Investor Guide to Hydraulic Fracturing and Water Stress](#)

EDF (2016)

[Rising Risk: Improving Methane Risk Disclosure in the Oil and Gas Sector](#)

ICCR and IEHN (2012)

[Extracting the Facts: An Investor Guide to Disclosing Risks from Hydraulic Fracturing Operations](#)

IEA (2015)

[World Energy Outlook](#)

Overseas Development Institute (2015)

[Can fracking green China's growth?](#)

PRI (2013)

[PRI-Coordinated engagement on fracking: Research on company disclosure and practices](#)

PRI and EDF (2016)

[An Investor's Guide to Methane: Engaging with Oil and Gas Companies to Manage a Rising Risk](#)

U.S. EIA (2016)

[Hydraulic fracturing accounts for about half of current U.S. crude oil production](#)

U.S. EIA (2016)

[Hydraulically fractured wells provide two-thirds of U.S. natural gas production](#)

U.S. EPA

[Hydraulic Fracturing Water Cycle](#)

CREDITS

Author: Gemma James

Contributors: Olivia Watson, Ben Pincombe

Editors: Heidi Aho, Ruth Wallis

Design: Thomas Salter, Alessandro Boaretto

The Principles for Responsible Investment (PRI)

The PRI works with its international network of signatories to put the six Principles for Responsible Investment into practice. Its goals are to understand the investment implications of environmental, social and governance (ESG) issues and to support signatories in integrating these issues into investment and ownership decisions. The PRI acts in the long-term interests of its signatories, of the financial markets and economies in which they operate and ultimately of the environment and society as a whole.

The six Principles for Responsible Investment are a voluntary and aspirational set of investment principles that offer a menu of possible actions for incorporating ESG issues into investment practice. The Principles were developed by investors, for investors. In implementing them, signatories contribute to developing a more sustainable global financial system.

More information: www.unpri.org



The PRI is an investor initiative in partnership with UNEP Finance Initiative and the UN Global Compact.

United Nations Environment Programme Finance Initiative (UNEP FI)

UNEP FI is a unique partnership between the United Nations Environment Programme (UNEP) and the global financial sector. UNEP FI works closely with over 200 financial institutions that are signatories to the UNEP FI Statement on Sustainable Development, and a range of partner organisations, to develop and promote linkages between sustainability and financial performance. Through peer-to-peer networks, research and training, UNEP FI carries out its mission to identify, promote, and realise the adoption of best environmental and sustainability practice at all levels of financial institution operations.

More information: www.unepfi.org



UN Global Compact

The United Nations Global Compact is a call to companies everywhere to align their operations and strategies with ten universally accepted principles in the areas of human rights, labour, environment and anti-corruption, and to take action in support of UN goals and issues embodied in the Sustainable Development Goals. The UN Global Compact is a leadership platform for the development, implementation and disclosure of responsible corporate practices. Launched in 2000, it is the largest corporate sustainability initiative in the world, with more than 8,800 companies and 4,000 non-business signatories based in over 160 countries, and more than 80 Local Networks.

More information: www.unglobalcompact.org

