

UNCONVENTIONAL GAS EXTRACTION

Its importance in the transition to a low carbon economy

FEBRUARY 2015



We believe that ‘unconventional gas’, which has lower greenhouse gas emission intensity than other fossil fuels, will form an important part of the transition to a low carbon economy. But while the unconventional gas industry can provide a significant economic benefit to rural and regional areas, there are environmental and social issues that companies must address. In this article we take a look at some of the issues that need to be addressed at both an environmental and social level, and examine why and how the industry needs to do more to build the required trust of stakeholders.

WHAT IS FRACKING?

Hydraulic fracturing or ‘fracking’ has been used in the conventional oil and gas industry for some time and, with the development of horizontal drilling techniques, has enabled the development of shale gas assets, especially in the US. Fracking involves pumping water under pressure, with sand and a mixture of other chemicals, to open up fractures within the rock. It aims to improve the gas recovery rates from the shale or coal seam. While fracturing is required for shale gas developments, it is not necessarily required for coal seam gas. The pressures needed for fracking for coal seam gas tend to be less than those needed for shale gas. This is due to the lower depth of coal seam gas developments, and the nature of coal compared to shale.



IAN WOODS
Head of Environmental,
Social and Governance
Investment Research

ABOUT THE AUTHOR

Ian was appointed to Head of ESG Investment Research in October 2011. He has been instrumental in establishing and developing AMP Capital’s approach to ESG issues, and their integration into the investment processes for Australian and international equity and fixed income funds. He also oversees the corporate governance and proxy voting of AMP Capital and its engagement with companies on ESG issues.

Ian’s background is in environmental and risk consulting both in the Asia/Pacific region and in Europe, and has worked with most of the large companies in Australia and the UK. He holds a PhD in Chemical Engineering from the University of Sydney, a Master of Environmental Law, a Master of Business Administration from the Australian Graduate School of Management and is a Graduate of the Australian Institute of Company Directors.

OUR APPROACH TO UNCONVENTIONAL GAS EXTRACTION

As a UNPRI signatory and a market leader in environmental, social and governance (ESG) research, AMP Capital has a strong tradition of incorporating ESG issues into investment analysis and decision making processes.

For a number of years, AMP Capital has conducted extensive ESG analysis and corporate engagement with the unconventional gas extraction sector. This includes coal seam methane or coal seam gas, shale gas and ‘fracking’.

Visiting coal seam gas operations has been fundamental to developing our understanding of environmental and social issues. We have visited the key coal seam gas areas of South-East Queensland, Gloucester, Camden and Narrabri in New South Wales. In addition to this, we have also visited the LNG facilities at Gladstone and spoken to different community groups in each of these areas.

As a result of these site visits and discussions with management, regulators and scientific experts, AMP Capital recognises that there is a wide variety of issues facing the industry. We also recognise that some of the issues facing shale gas are different to those facing coal seam gas. The issues facing both differ depending on the location and regulatory and planning controls.

The environmental and social issues linked to unconventional gas are discussed in more detail below.

ENVIRONMENTAL ISSUES RELATING TO UNCONVENTIONAL GAS

Disposal of groundwater

The dewatering of coal-seams to facilitate the production of coal seam gas can create a significant amount of groundwater which needs to be disposed. It is our view that evaporation ponds are not a long-term solution for the disposal of ground water, but that the use of reverse osmosis plants and appropriate disposal of the waste brine solution is a preferred option. With this approach, water from reverse osmosis plants can be used for beneficial purposes, such as supplementing industrial and/or domestic water supplies.

Impact on systems and resources

The impact on groundwater systems can be difficult to assess given the large geographic areas some coal seam gas operations cover. This is further complicated by the complex geology across these operations and the time it can take for these impacts to manifest themselves.

In order to manage and mitigate the impact of groundwater, the levels and quality of groundwater should be comprehensively monitored – both during and after coal seam gas operations. In addition, the updating of groundwater impact models are considered essential components of the management and mitigation of groundwater impacts. To facilitate this assessment, it may be necessary to drill groundwater monitoring wells if the existing groundwater understanding is incomplete.

In some high value agriculture areas, such as Condamine and the Namoi Valley alluviums, may mean that these areas are not suitable for coal seam gas developments. Further, other users of groundwater resources may need to be either compensated or impacts rectified as a result of coal seam gas groundwater dewatering. Where significant groundwater impacts cannot be mitigated, especially those which had not been expected, coal seam gas operations may need to cease or not be undertaken.

Coal seam gas wells, collection system and produced water dams in South East Queensland



Source: AMP Capital.

The use of high quality water

In areas where water resources are scarce or in high demand, such as in parts of the US, the sourcing of large volumes of high quality water for fracking has been controversial. As such, there is a growing expectation that fracking should use poorer quality water and collect and reuse flowback water. Any fracking flowback water not reused needs to be appropriately treated and disposed of.

The use of chemicals

In the US, the potential toxicity of fracking chemicals has also been a significant issue. There has been community concern around the lack of disclosure of chemicals being used, or the use of the potential carcinogen BTEX. Australian companies have committed to disclosing which chemicals are used, and have also committed to not use BTEX in fracking operations. It is our view that, while the chemicals used in fracking should be disclosed, stored and disposed of properly, we do not believe they pose a significant ongoing

environmental issue. It should also be noted that in coal seams, BTEX often naturally occurs in groundwater.

Potential cross-contamination of groundwater systems

Concerns have also been raised over the potential cross contamination of groundwater systems which can result from poorly completed unconventional wells – or by improved conductivity from changes to geological faults from fracking.

To avoid fracking in high risk faulted areas, we believe that 3D seismic surveys should be used prior to fracking. In addition, there is a need to construct and complete wells to the highest quality in order to minimise groundwater cross-contamination.

Fugitive emissions

Cold venting of gas during work-overs or exploration, poorly constructed wells, and poorly maintained compressors and gas and water gathering systems may lead to significant fugitive methane emissions. These issues can and should be addressed through the use of 'green' well completion techniques and collection systems.

Coal seam gas pilot site in South East Queensland



Source: AMP Capital.

Underground coal gasification

Underground coal gasification, which involves the partial combustion of coal underground, is considered by some as an unconventional gas technique. We believe that underground coal gasification has significantly more environmental risks than either shale gas or coal seam gas. Neither the Responsible Investment Leaders funds nor Sustainable Funds invest in companies involved in underground coal gasification.

We believe key environmental issues can be managed

While there is a range of environmental issues that need to be addressed for unconventional gas, we believe that the key environmental issues can be appropriately managed through baseline monitoring, impact assessment prior to development, use of best available technology, ongoing review and reassessment of future impacts, and adaptive management. However, in areas of high value agriculture, where high quality groundwater is critical, or high value environmental areas, it may be inappropriate to develop unconventional gas resources.

SOCIAL ISSUES RELATING TO UNCONVENTIONAL GAS

As well as environmental issues, there are social issues relating to unconventional gas. These are possibly even more important and challenging to manage.

Conflicts in land use

Much of the development of unconventional gas, and in particular coal seam gas in Australia, has occurred in areas that have had either little or no association with the oil and gas industry. This has brought about conflicts in land use and changes to local communities.

While these changes may have benefitted some, for others they have caused economic and social problems. In addition, government regulation regarding access to land for exploration and development of unconventional gas has not been regarded as appropriately recognising landholder rights.

Due to poor community and landholder consultation practices by some players, a lack of trust has developed of coal seam gas and shale gas companies. This is particularly the case with early players in coal seam gas in Australia and a minority of shale gas players in the US.

The over-riding of perceived landowner 'rights', inadequate compensation and imbalance of power in negotiations has led to a backlash against some unconventional gas developments. Some companies have not been sufficiently transparent or respectful of stakeholders leading to a lack of trust not only of the particular companies involved but the industry as a whole.

Finding a way forward

The development of the unconventional gas industry will change the nature and character of some areas. As with many developments, the planning and approval process has to balance the potential costs and benefits that may accrue at a local, regional and national level. It needs to recognise that these costs and benefits will be different at each level. It is also critical that the planning and approval process is transparent, open and comprehensive to enable all stakeholders to participate in the approval process. Unconventional gas companies need to engage with impacted communities and work with them to minimise and manage potentially negative social impacts that may occur over both the short and long-term.

We believe stakeholder engagement is more than merely communicating and educating. It involves listening to and, as far as is possible, being responsive to the issues raised by stakeholders.

Landholders' rights and landholder compensation arrangements differ in the US to those in Australia. This is, in part, due to how resources are legally recognised. In addition, some landholders that are close to oil and gas developments believe they may be materially financially impacted but not entitled to compensation (for example, landholders next to a landholder that has allowed an unconventional gas well).

To the credit of some unconventional gas companies have gone beyond what is required by law and have committed to respecting a landholder who refuses coal seam gas developments on their land. In addition, they have provided appropriate support to landholders during negotiation, recognising that, in many cases, landholders do not have the time or the resources to be able to negotiate landholder agreements on an equal footing. Landholder agreements are not only about financial compensation but also include land access and working with landholders to minimise the potential negative impacts on their ability to work their land. Communities and companies have also benefitted from the trust that has developed as a result of making landholder agreements public.

We recognise that some social aspects are difficult to manage. These might include short-term impacts on social services in regional communities. These may result from a large influx of people during the construction phase of a development. Again, it is critical that companies liaise with local communities and government service providers to minimise potential adverse impacts.

Finally, there are some impacts which will be difficult to reconcile. While companies may be able to minimise the potential aesthetic

impacts of developments, there may be a more negative impact on the character of the landscape (e.g. an area may no longer be regarded as an idyllic rural retreat). In such cases, any change may be considered unacceptable to some, while others see the change positive providing new opportunities. Where there is a natural tension in the community, it will be critical that the planning and approval process is transparent and the company builds trust and works with all of the stakeholders in the community.

Impacts on native vegetation from a saline water spill from coal seam gas processing plant in Pilliga Forest, New South Wales



Source: AMP Capital.

FINAL WORDS

We believe that unconventional gas can make a meaningful contribution to the Australian economy and the transition to a lower carbon economy. However, there are some in the industry who will need to continue to build trust of stakeholders and demonstrate they understand and can appropriately manage the concerns of these stakeholders to investors.

We will continue to engage with unconventional gas companies to ensure they manage their environmental and social issues appropriately. This should benefit not only the company, but also investors, the community and the environment. To assist in this process, we have developed an 'Unconventional gas disclosure framework'. This brings together various aspects of good practice and seeks to benefit unconventional gas companies in their communication with both investors and other stakeholders.

AMP Capital is a member of the UN PRI Unconventional Gas Working Group. The aim of this group is to deepen the signatories' understanding of the issues of unconventional gas. It does this by educating and proactively working to decrease investment risk in unconventional gas, and collectively engages with companies involved in coal seam gas and shale gas on issues of potential material risk to investors. It is our view that this activity is in the best interest of the company, investors and the community.

CONTACT US

If you would like to know more about how AMP Capital can help you, please visit www.ampcapital.com

Important notice While every care has been taken in the preparation of this document, AMP Capital Investors Limited (ABN 59 001 777 591, AFSL 232497) makes no representation or warranty as to the accuracy or completeness of any statement in it including, without limitation, any forecasts. Past performance is not a reliable indicator of future performance. This document has been prepared for the purpose of providing general information, without taking account of any particular investor's objectives, financial situation or needs. An investor should, before making any investment decisions, consider the appropriateness of the information in this document, and seek professional advice, having regard to the investor's objectives, financial situation and needs. This document is solely for the use of the party to whom it is provided and must not be provided to any other person or entity without the express written consent of AMP Capital.

© Copyright 2014 AMP Capital Investors Limited. All rights reserved.