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# Be careful of what you wish for

*The economic impacts of Queensland's  
unconventional gas experiment and the  
implications for Northern Territory policy makers.*

Discussion paper

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**November 2015**

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# Summary

The gas industry says that unconventional gas development brought an economic and jobs boom to Queensland, and promises the same for the Northern Territory. Territorians should test the claims of the industry in Queensland to determine the likely economic and jobs impacts of unconventional gas development in the Northern Territory.

In contrast to the economic benefits promised, recent gas industry funded studies of the economic and social impacts of gas in Queensland’s unconventional gas fields have found:

- Local business stakeholders reported a deterioration in:
  - Financial capital
  - Local Infrastructure
  - Local skills
  - Social cohesion
  - The local environment
- Unconventional gas has affected community wellbeing:
  - Fewer than one in four local people approved of the unconventional gas industry, with less than 6% believing it would “lead to something better”.
- Unconventional gas creates few additional jobs:
  - There were virtually no spillover jobs created in local retail or manufacturing.
  - Gas jobs will be slashed by 80% at the end of the construction period.
- For every 10 unconventional gas jobs created, 7 service sector jobs were lost.

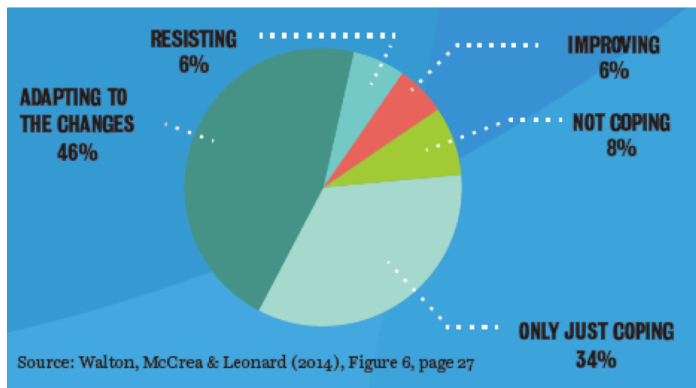
**Figure 1: The impact of unconventional gas development on local businesses.**

*How did local business stakeholders in Queensland’s Darling Downs perceive the impact of unconventional gas and mining on their region?*

Source: CSRM University of Queensland

Financial capital	Worse
Infrastructure	Worse
Labour force skills	Worse
Social networks	Worse
Environment	Worse

**Figure 2: The social impacts of unconventional gas development on communities in Queensland's Darling Downs**



There have also been few economic benefits for the wider economy. The industry emphasises the high *value* of the gas it exports, but the value of gas exports largely flow to the gas companies rather than to the Australian community. As the Reserve Bank of Australia concluded:

The effect on Australian living standards will be less noticeable than [the increase in gas production] given the low employment intensity of LNG production, the high level of foreign ownership of the LNG industry and, in the near term, the use of deductions on taxation payments.<sup>1</sup>

Queensland's experience shows that reality does not match the unconventional gas industry's claims. Few benefits are realised outside the gas industry, and there are serious social and economic effects on local communities and existing businesses.

<sup>1</sup> Cassidy N and Kosev M, (2015) Australia and the Global LNG Market, RBA

<sup>2</sup> The Australia Institute facts Fight Back June 30 2013. <http://www.factsfightback.org.au/did-the-gas-industry-create-100000-jobs-last-year-check-the-facts/>

The economic impacts of Queensland's unconventional gas experiment and the implications for Northern Territory policy makers.

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# Introduction

When seeking development approval, oil and gas companies justify their projects' significant environmental and social harm on the grounds that the projects will bring jobs and economic growth.

The huge profits at stake encourage companies to exaggerate the economic benefits of their projects and downplay their negative effects. These economic claims are made in formal approval process, public relations activities and lobbying of policy makers.

This kind of exaggeration has become routine for many resource companies, often reaching almost comic proportions. Notorious cases include the Rio Tinto Warkworth coal mine expansion in NSW where the company claimed it would create 44,000 additional jobs despite the expansion only requiring 130 additional workers. The NSW Land and Environment Court rejected the companies claims and overturned the approval, a decision that was upheld by the Supreme Court of NSW. Similarly the proponents of the proposed the Carmichael coal mine the project would create 10,000 jobs. When challenged in court the companies own economic expert acknowledged the actual figure was less than 1,476 jobs.

In 2013 the Australian Petroleum Production and Exploration Association APPEA claimed that the oil and gas industry had created a 100,000 new jobs in a single year. According to The Australian Bureau of Statistics the oil and gas industry in Australia added only 9,400 jobs that year, and employed 20,700 people in total.<sup>2</sup> Even counting all the additional construction jobs would come nowhere near the 100,000 jobs claimed. These additional construction jobs would have come largely at the expense of jobs in other industries, particularly given the very tight labour market at the time.

The absurdity of the claims belies the seriousness of the deception.

These projects have serious environmental and social impacts that are too often ignored by policy makers and bureaucrats who have been willing to accept the assurances of resource companies with little scrutiny applied to their claims. This has sometimes led to serious environment and social impacts for local communities from projects that provide little benefit to the wider population.

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<sup>2</sup> The Australia Institute facts Fight Back June 30 2013. <http://www.factsfightback.org.au/did-the-gas-industry-create-100000-jobs-last-year-check-the-facts/>



The huge unconventional gas projects approved in Queensland in 2010 are a case in point. The economic claims of the proponents were not tested by the government, despite its obligation to objectively assess the projects. Recent research examined in this paper clearly shows that few of the promised benefits have materialised and existing businesses and entire industries have been badly affected. Long-term jobs have been sacrificed for short-term gas construction jobs.

Only 6% of local people living in gasfield areas think that the industry has improved their lives – as many as are actively resisting it. As well as active resisters, a further 42% say that they are “not coping” or “only just coping” with the changes the industry has made to their lives. Actual royalty payments are a small fraction of the estimates made at approval and flow on economic activity failed to materialise, as companies bypassed local industry and suppliers in favour of global supply chains.

The Northern Territory government has issued unconventional gas licenses for almost the entire territory. Speculative gas interests have a strong incentive to increase the value of their licenses by gaining environmental approvals and government promises to subsidise infrastructure.

Northern Territory policy makers can learn from the experience in Queensland. The economic claims of the unconventional gas industry must be subject to scrutiny and due diligence. Projects should only proceed if they provide a net benefit to the Territory community, not just quick profits for gas companies.

# 1. The impacts of unconventional gas developments on local businesses

While some people and businesses benefit from unconventional gas development, many other businesses and industries can be negatively impacted and jobs in other sectors are often lost as a result.

The most advanced unconventional gas development in Australia is in Queensland's Darling Downs. The gas industry uses this region as an example of the economic benefits that unconventional gas provides local communities<sup>3</sup>. The research tells a more complicated story.

The most detailed examination of the economic impacts of unconventional gas development in the Darling Downs is a study carried out between 2008 and 2013 by the industry-funded Sustainable Minerals Institute SMI at the University of Queensland.<sup>4</sup>

This study surveyed stakeholders from different sectors in the local community including the local business community, agriculture, local government, advocacy groups and environmental consultants, as well as the mining and unconventional gas industries.

The survey asked stakeholders to assess the effect of unconventional gas and mining in the region over a five-year period on the following key indicators:

1. **Financial capital:** Available revenue streams and economic resources.
2. **Built capital:** The physical infrastructure such as buildings, transport, equipment.
3. **Social capital:** The degree to which people know each other and collaborate and the level of trust people have in local organisations and institutions.
4. **Human capital:** Assets such as skills, knowledge, abilities and good health possessed by individuals that enable them to work, earn a living, contribute to society and thereby build other forms of capital.
5. **Natural capital:** Key natural resources, such as water, land, clean air, wildlife and forests that people can access for lifestyle or livelihood purposes.

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<sup>3</sup> Natural Coal Seam Gas, Regional Development, APPEA

<http://www.naturalcsg.com.au/benefits/regional-development/>

<sup>4</sup> Everingham, J., Collins, N., Rodriguez, D. Cavaye, J., Vink, S., Rifkin, W. & Baumgartl, T. (2013) *Energy resources from the food bowl: an uneasy co-existence. Identifying and managing cumulative impacts of mining and agriculture. Project report.* CSRM, The University of Queensland: Brisbane.

All stakeholder groups other than those representing mining and unconventional gas believed that the development of mining and unconventional gas had a negative impact on all or most types of capital. Even the mining and unconventional gas industries thought that local infrastructure had deteriorated as a result of mining and unconventional gas development in the region.

**Figure 3: Stakeholder responses assessing the change in different types of capital over the last 5 years as a result of interaction between gas and other industries.**

	Financial capital	Human capital	Built capital	Social capital	Natural capital
<b>Gas</b>	Better	Better	Worse	Better	Better
<b>Mining</b>	Better	Better	Worse	Better	Better
<b>Agriculture</b>	Worse	Worse	Worse	Worse	Worse
<b>Local business</b>	Worse	Worse	Worse	Worse	Worse
<b>Local government</b>	Worse	Better	Worse	Same	Same
<b>Community</b>	Worse	Better	Worse	Worse	Worse
<b>Advocacy</b>	Worse	Worse	Worse	Worse	Worse

Far from mining and unconventional gas providing economic benefits, local businesses felt that it had reduced financial capital, human capital, infrastructure, social capital and natural capital.

Local businesses have to compete with inflated gas industry wages if they want to recruit and retain staff and they experience increased rent and competition for services (particularly trade and mechanical repairs). There are also disruptions to farmers from the rollout of access roads, pipelines, water treatment plants and other infrastructure. Big increases in truck traffic tend to disrupt other forms of transport and damage roads.

Some businesses do benefit. Motels, bars and fast food chains experience a burst of demand during the brief construction phase, but may struggle afterwards. Waste disposal companies can profit from storing, transporting and treating the millions of litres of toxic “produced” or “flow-back” water and salt from the extraction process.

Some stakeholders discussed the effect on existing local businesses:

Obviously if you've got a major engineering or earth moving business, you attract business, you're doing incredibly well, or a motel.

But, if you work in town at a local shop, or the council, you're doing incredibly poorly, because your rents have gone through the roof and suddenly you're flat out paying to be able to live in town. For us, we're seeing increased costs.

All our professional services are \$100 an hour plus, whereas they used to be [in the] 40s and 50s. Freight is dearer. We can't get labour. We're relying on backpackers a lot more because we just can't get permanent staff. So, it's quite an added cost to one sector of the community, while the other sector booms. <sup>5</sup>

Having to compete with inflated resource industry wages was also of great concern:

What they're paying for wages [in some towns] is two and half times what the wage should be – just to hold men. That's forcing consumer goods up, to try to cover the costs of those wages... So it's all spinning down the line... [For example] from a hardware perspective, anyone doing renovations to their home, even just the little bits are all getting more expensive because these guys are trying to cover the increase in wages that they've had to pay to retain men. And the [resources] companies are walking into businesses and offering staff – mainly mechanics... huge wages. <sup>6</sup>

Other stakeholders described the corrosion of social capital:

[I]n regards to a divide between people, not just landholders versus townies, but for instance I've got a lot of friends who used to work in agriculture and now work for gas companies – a lot of them. And some family members don't speak to them anymore because they're still on the land...

But even in towns now... once you would go to the local pub in Dalby, it was all full of farmers and that sort of thing and now you've got guys in their high vis' and after a few rums things are getting... they do, it's starting to get quite ugly. There's quite a bit of animosity going on. And agricultural communities have never been like that – they're not. And now that's building up pretty much. <sup>7</sup>

It is clear from interviews with businesses in unconventional gas development areas that the industry brings substantial costs. The CSRSM study showed that business

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<sup>5</sup> Everingham et al, p 38.

<sup>6</sup> Everingham et al, p 39.

<sup>7</sup> Everingham et al, p 51.

stakeholders perceived the costs as outweighing the benefits. Territory business organisations and policy makers should be aware of how this has played out in Queensland when considering the expansion of the gas industry in the NT.

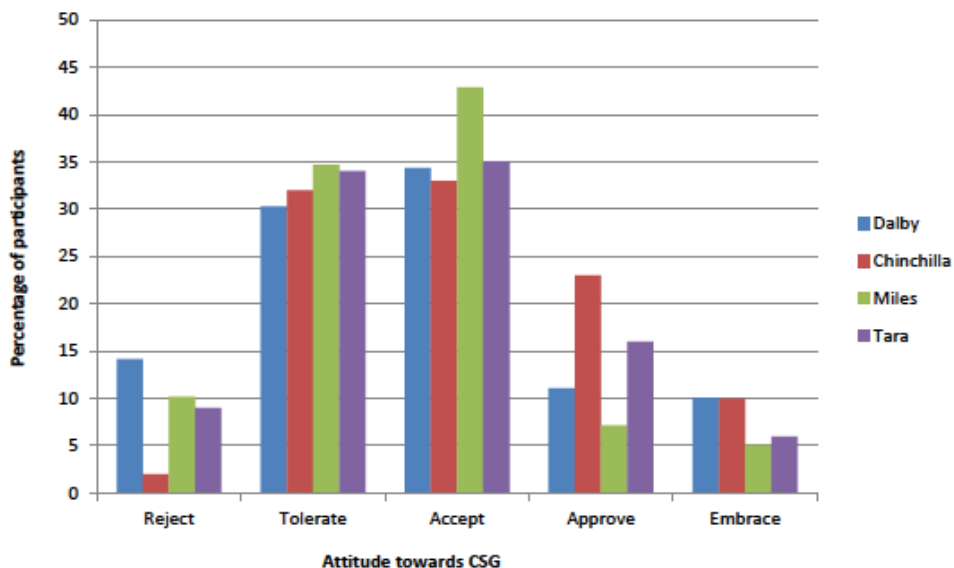
Negative impacts on local businesses also affect communities at the social level. The next section examines the social impacts in more detail.

## 2. Impacts on local communities

Unconventional gas development in Queensland’s Darling Downs distresses local communities. Few people approve of the industry and even fewer believe it will improve conditions.

A recent CSIRO survey of the Western Darling Downs found that almost half the local population was “only just coping” with, “not coping” with or actively resisting the changes to their communities caused by unconventional gas development. This study was undertaken by researchers funded by the largest unconventional gas companies in Queensland, including Australia Pacific LNG and QGC.<sup>8</sup>

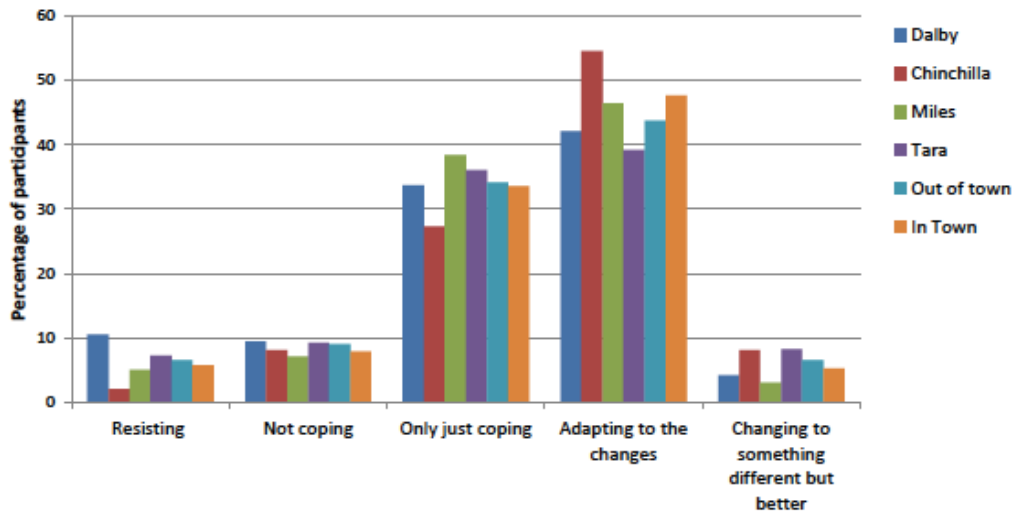
**Figure 4: Attitudes towards unconventional gas in the region by subregions. CSIRO.**



Less than a quarter of people surveyed approved of the unconventional gas industry. Only 6% of people felt the community was improving as a result of the industry, while many were struggling to cope with the changes the industry had brought.

<sup>8</sup> Walton, A., McCrea, R., & Leonard, R. (2014). *CSIRO survey of community wellbeing and responding to change: Western Downs region in Queensland*. CSIRO Technical report: CSIRO, Australia.

**Figure 5: Community responses to unconventional gas development in the Western Downs Queensland. CSIRO**

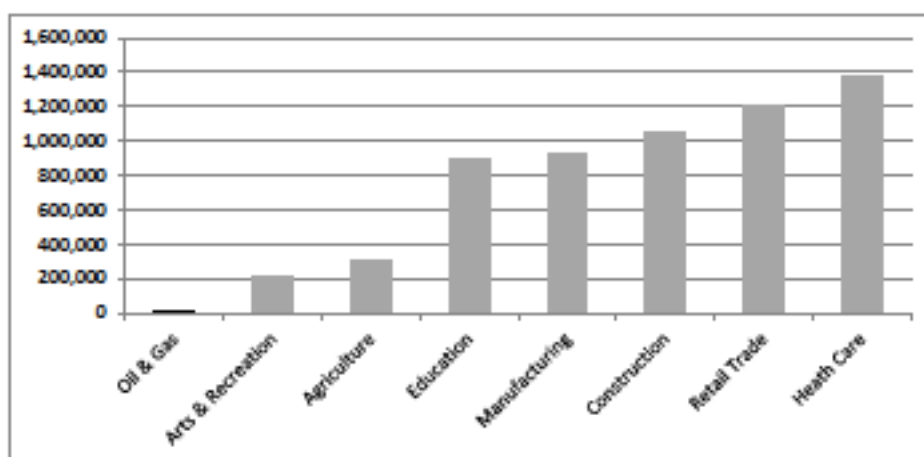


### 3. Unconventional gas does not employ many people.

According to the Australian bureau of statistics, in May 2015 the entire oil and gas industry in Australia employed 27,500 Australian workers, or less than a quarter of 1% of the Australian workforce.<sup>9</sup>

By way of comparison, the total employment provided by the oil and gas industry is considerably less than the retail hardware store Bunnings's, which employs 33,000.<sup>10</sup>

**Figure 6: Employment in Australia by selected industry.**



Employment in the gas industry is likely to decline. The vast majority of gas jobs are during the construction phase. As the construction phase winds up, the unconventional gas companies operating in Queensland are cutting their workforces by around 80%.<sup>11</sup>

Territorians seeking employment for any unconventional project in the Northern Territory will have to compete with experienced workers from interstate. The gas industry requires experienced, skilled workers. With the wind down of the CSG construction boom in Queensland, there is a large pool of highly-qualified workers who

<sup>9</sup> ABS (2013a). *6291.0.55.003 Labour Force, Australia, Detailed, Quarterly, September 2015*, Australian Bureau of Statistics, Accessed 11/11/15, <http://www.abs.gov.au/ausstats/abs@.nsf/mf/6202.0>

<sup>10</sup> Bunnings (2013). *About Us: Who we are*, Bunnings, viewed 21 November 2013, <<http://www.bunnings.com.au/about-us>>.

<sup>11</sup> Bureau of Resource and Energy Economics, *Resource and Energy Major Projects 2013*.



are more likely to fill positions than unskilled Territorians with no experience in gas field construction and operation.

Experience in Queensland has shown that construction workforces are almost entirely male non-residential workers living in workers camps on the outskirts of towns. These workers are often referred to as fly-In, fly-out (FIFO) or drive-in, drive-out (DIDO). Few people from local regional communities are likely to be employed in either the construction or the operational phases of the gas fields.

If locals are employed on these projects, they are unlikely to be previously unemployed people getting a job. When the gas industry employs local people, they tend to be skilled workers who relocate from local manufacturing and agriculture.

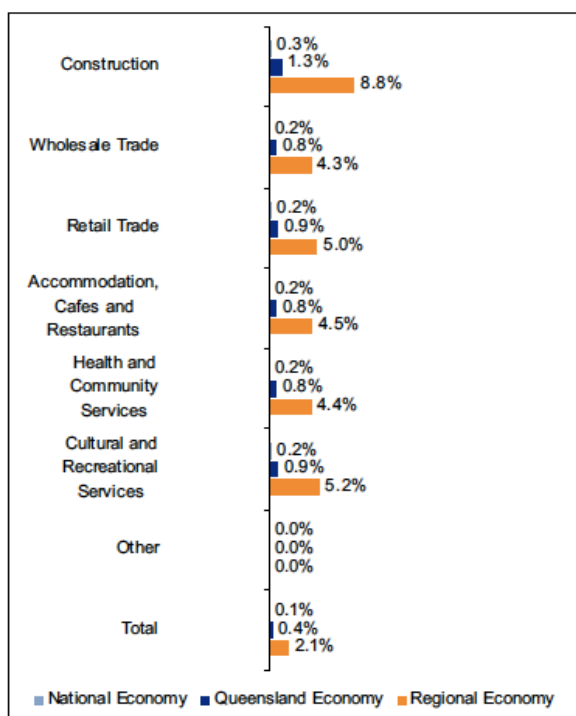
As explained above in section 1, this disrupts local businesses and forces them to compete with inflated gas industry wages to recruit or retain staff.

## 4. Promise versus reality

As discussed in section 3, the unconventional gas extraction employs relatively few people. These jobs are mostly short term and include few people from local regional communities. However the industry claims that the flow on effects result in people being employed elsewhere in the community. However recent research shows that the employment effects have been very different to industry industry claims.

For example, the original economic impact statement used to gain approval for the largest unconventional gas project in Queensland, Australia Pacific LNG (APLNG), claimed that the construction phase of the project would increase regional employment in the retail trade by 5 percent, and a range of regional service sectors by between 4.5 and 5.2 percent.<sup>12</sup>

**Figure 7: Australia Pacific LNG direct and indirect employment by industry**



Source: KPMG, APLNG EIS Economic Impact Assessment report, Chart 5.3 p29

However the reality was very different. At the height of the construction boom in 2013 a study was undertaken by the Gas Industry Social and Environmental Research Alliance (GISERA) into the local economic impacts of the unconventional gas boom.

<sup>12</sup> KPMG, APLNG EIS Economic Impact Assessment report, Chart 5.3 p29.

The study examined the actual economic impacts of unconventional gas development in Queensland’s gas fields. As we can see in figure 5 below, the study found that in fact, while there was an increase in short term construction related jobs (construction and professional services), there were virtually no additional jobs in retail or manufacturing as a result of unconventional gas development.<sup>13</sup> A subsequent study by the same authors found that for every ten people employed in CSG, eighteen agricultural jobs were lost.<sup>14</sup>

**Figure 8: Unconventional gas employment spillovers in different sectors of Queensland’s Darling Downs economy.**

	Elasticity	Additional job for each new CSG job
<b>Local goods sector</b>		
Construction	0.832 (0.426) *	1.412
Professional services	0.704 (0.259) **	0.412
Retail trade	0.011 (0.140)	0.024
Services†	-0.205 (0.230)	-0.732
<b>Traded sector</b>		
Manufacturing	0.068 (0.199)	0.160

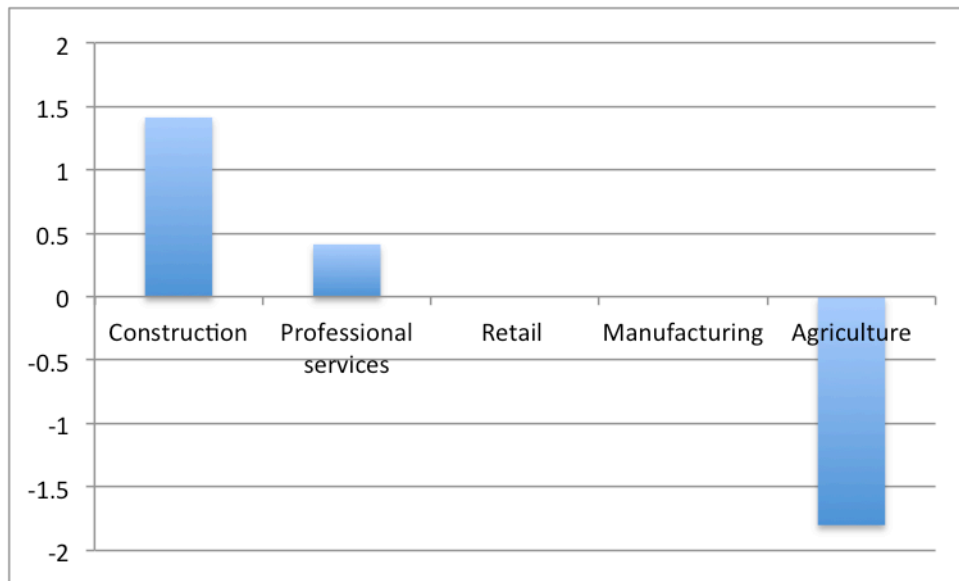
Notes: Elasticity values are 2SLS estimations for coefficient  $\psi$  in equation (2). The number of CSG wells in an SLA is used as instrument for the log change of mining employment. Values estimated using sample 3 (n = 48). F-stat first-stage = 10.74. Robust clustered std. errors at LGA levels in parentheses. \*p < .10. \*\*p < .05. †Services sector include employment in accommodation, rental agencies, transport and ‘other services’.

Source: Flemming and Measham (2013)

<sup>13</sup> Fleming, D. and Measham, T. (2013) Local economic impacts of an unconventional energy boom: the coal seam gas industry in Australia. Report to the Gas Industry Social and Environmental Research Alliance (GISERA). June 2013. CSIRO, Canberra.

<sup>14</sup> Flemming D and Measham T (2015a) Local economic impacts of an unconventional energy boom; The coal seam gas industry in Australia, The Australian Journal of Agricultural and Resource Economics 59(1) pp 78-94

**Figure 9 Spillover job impacts per CSG job.**



Source: Flemming and Measham 2013 and 2015a

In other words, the unconventional gas boom had virtually no employment benefits outside of the gas industry itself. In the words of the authors, “job spillovers into non-mining employment are negligible”. It also shows that agricultural jobs were lost and that the jobs benefits employment gains were almost entirely short term construction jobs and (largely construction phase related) professional services jobs.

The Queensland unconventional gas boom is one of the largest and most rapid resource expansions ever seen, and yet it led to virtually no increase in employment in local retail or manufacturing, and a loss of long-term service jobs.

The lack of any increase in retail employment in local communities is largely a result of the predominance of no-resident workers living in self-contained workers camps. These employees work long shifts that limit opportunities to spend their income in the local community.

The lack of flow on manufacturing jobs is the result of the gas industry’s preference for sourcing materials and equipment from overseas. For example, the huge LNG export and processing facilities at Gladstone in Queensland were entirely designed and built overseas.

All three export terminals were built by the global oil and gas engineering company Bechtel. On their website, Bechtel promote their “efficiency” in not employing Australians. The website page shown in Figure 8 describes all three of the Gladstone LNG Processing plants and export terminals as being designed by Bechtel engineers in

Houston, Delhi and Shanghai, to be built in the Philippines, Indonesia and Thailand. The terminals were then floated over to Australia to be assembled.<sup>15</sup>

**Figure 10: Bechtel description of design and construction process for their Curtis Island LNG terminals in Queensland.**

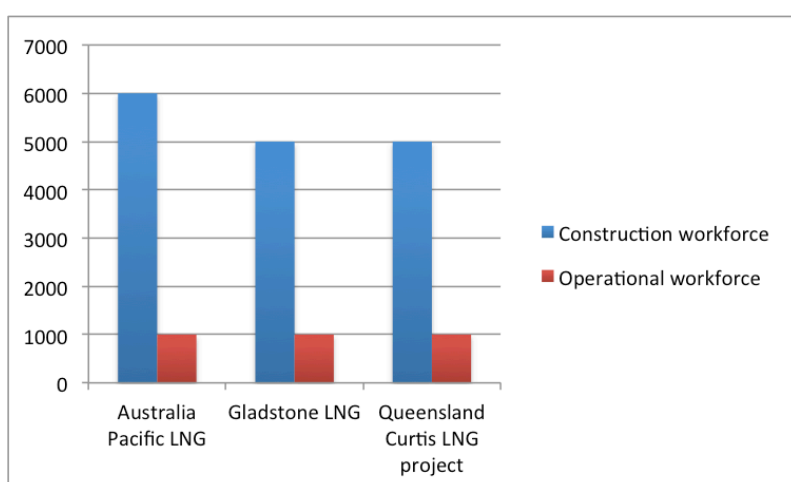


<sup>15</sup> Bechtel website <http://www.bechtel.com/projects/curtis-island-lng/> accessed 10/11/15.

## 5. Boom and bust

According to the Office of the Chief Economist of Australia, the three unconventional gas projects in Queensland employed 16,000 people during their brief<sup>16</sup> construction phase. This is falling by over 80% to 3,000 employees as the projects enter their operational phase.<sup>17</sup> This will represent less than 0.13% of Queensland's total workforce of over 2.3 million.<sup>18</sup>

**Figure 11: Queensland unconventional gas operation and construction employment.**



Source: Office of the Chief Economist of Australia (2015).

The construction workforces may have been considerably smaller than reported by the Office of the Chief Economist. The office based the numbers on “fact sheets provided by the companies”.<sup>19</sup> APLNG, the largest of Queensland's LNG projects says in its Economic Impact Assessment that “over the 11-year construction phase, there will be an approximate average of 3,300 people working on the Australia Pacific LNG project each year. Employment will peak from 2012 to 2014 inclusive”. This is a little over half the number reported by the Office of the Chief Economist but would still represent more than a two-thirds reduction in the workforce between the construction and operational phase.

<sup>16</sup> The length of the construction period varies between the projects. In the case the Gladstone LNG, the construction period was 4 years. URS (2009) GLNG Economic Impact Statement.

<sup>17</sup> Office of the Chief Economist, Resources and Energy Major Projects list April 2015. Viewed on 11 November 2015, <<http://www.industry.gov.au/Office-of-the-Chief-Economist/Publications/Pages/Resources-and-energy-major-projects.aspx>>

<sup>18</sup> ABS Labour Force Statistics.

<sup>19</sup> Correspondence with the Office of the Chief Economist.

Any unconventional gas project in the Northern Territory would employ far fewer workers than in Queensland.

A large proportion of both the construction and operational workforce in Queensland worked on assembling the LNG terminals at Gladstone. Additional LNG terminals will not be required in the Northern Territory as the gas will be exported via the Queensland terminals.

There is also likely to be a large pool of experienced gas workers in Western Australia and Queensland who are well placed to fill Northern Territory unconventional gas jobs. The three Queensland LNG terminals, the Northern Territory Inpex project and several Western Australian LNG terminals and offshore gas fields were all built simultaneously. The decision to allow all these projects to be built simultaneously created an acute skills shortage at the time. With the wind down of the construction phase of these projects there is an abundance of interstate skilled gas construction workers who will be far better placed to work in any gas projects in the NT than unemployed NT residents who lack these skills.

To the extent that NT residents are employed, they are likely to be skilled workers already employed in other industries, particularly manufacturing and agriculture. This effect drives up costs for other industries as they are forced to compete with the oil and gas industry for skilled workers.

## 6. Impacts on manufacturing

The unconventional gas industry hurts the manufacturing industry, mostly because they compete for skilled labour. Economic modelling by the Queensland unconventional gas company Arrow LNG for its Economic Impact Assessment found that its project would displace \$441.5 million worth of manufacturing output and 1,000 manufacturing jobs in Queensland.<sup>20</sup>

Arrow LNG is just one of the four large unconventional gas projects in Queensland. The full employment impacts of this single project can be seen in Figure 11 below.

While the modelling suggests the project would create a considerable number of short term construction jobs, these jobs come at the expense of long term jobs in other sectors, particularly manufacturing.

Once extinguished, manufacturing activity is difficult to rebuild. Plants and equipment require a large upfront investment, but only deliver returns over the long term. If a region is likely to experience further disruption from large resource projects, investors are unlikely to have confidence in manufacturing.

**Figure 12: Average Annual Impact on Employment by Industry in Queensland of Arrow LNG project.**

Industry	Change in Employment (FTEs)			
	2013-14 to 2016-17 (Phase 1 Construction)	2018-19 to 2021-22 (Phase 1 Steady State Operation)	2022-23 to 2024-25 (Phase 2 Construction) <sup>(a)</sup>	2026-27 to 2029-30 (Phase 2 Steady State Operation) <sup>(a)</sup>
<b>Queensland</b>				
Agriculture	-59	-24	-66	-42
Mining	-65	-28	-69	-50
Manufacturing	-1,089	-25	-804	-200
Electricity and water	-10	25	39	55
Construction	1,833	127	1,325	257
Trade	221	58	255	130
Transport and storage	-246	-27	-186	-37
Business, finance and insurance services	-132	83	119	166
Public administration, defence, health and education	29	-6	-45	-19
Recreation and other services	22	-4	1	-8
Ownership of dwellings	6	0	3	0
<b>Total Change in Employment in Queensland</b>	<b>511</b>	<b>180</b>	<b>571</b>	<b>251</b>

Note: (a) It should be noted that operation of Phase 1 (trains 1 and 2) is ongoing during these time periods.  
Source: Prime Research (unpublished).

Source: AEC Group (2011) Arrow LNG Economic Impact Assessment, table 5.3 p.43

<sup>20</sup> Grudnoff, M. (2015) *An analysis of the economic impacts of Arrow Energy's Gladstone LNG Plant.*



As well as higher labour costs, unconventional gas projects have – perversely – increased the cost of gas for manufacturers.

In their Economic Impact Assessment of 2010 GLNG noted that “a relatively mild increase in gas prices associated with the QCLNG Project may occur in the eastern Australian market”.<sup>21</sup>

In fact, linking Australian domestic gas prices to higher Asian prices has more than doubled the wholesale gas price.

The recent collapse in the oil price, and subsequently Asian “oil linked” gas prices, has not caused a commensurate reduction in the price of gas being offered to manufacturers. This has led to claims of “cartel like behaviour”.<sup>22</sup> The ACCC’s ongoing inquiry into the East Coast gas market is investigating “the existence of, or potential for, anti-competitive behaviour and the impact of such behaviour on purchasers of gas”.<sup>23</sup>

Economic modeling by Deloitte Access Consulting shows that east coast gas price rises caused by unconventional gas exports have created a \$81 billion windfall for the gas industry (mostly global oil and gas majors), but will cost the manufacturing industry \$118 billion.<sup>24</sup>

**Figure 13: Industry output impacts for Australia as a result of gas price increases.**

**Table i: Industry output impacts for Australia for the years 2015, 2018 and 2021 and cumulative Net Present Value (NPV) of output impacts over 2014 - 2021**

Value of difference from baseline			% difference			NPV
2015	2018	2021	2015	2018	2021	Cumulative impact over 2014-2021

<sup>21</sup> GLNG Economic Impact Statement, volume 8 chapter 10, p 12.

<sup>22</sup> West, M. (October 2015) “East coast gas market has all the hallmarks of a cartel”. Accessed 11 November 2015, <<http://www.smh.com.au/business/comment-and-analysis/east-coast-gas-market-has-all-the-hallmarks-of-a-cartel-20151011-gk6b4i.html>>.

<sup>23</sup> ACCC Project Overview, *East Coast Gas Inquiry*. Accessed 11 November 2015, <<https://www.accc.gov.au/regulated-infrastructure/energy/east-coast-gas-inquiry-2015>>.

<sup>24</sup> Deloitte Access Economics (2014) *Gas market transformations—Economic consequences for the manufacturing sector* Table 1, p 3.

<b>SKM scenario</b>							
<b>Output (\$ million)</b>							
Manufacturing	-23,199	-22,259	-30,386	-3.97	-3.48	-4.38	-118,069
Gas	8,922	17,672	24,225	47.81	65.63	57.07	80,746
Mining	-7,226	-6,031	-9,679	-3.55	-2.69	-3.96	-33,804
Agriculture	-1,110	-798	-1,430	-1.98	-1.32	-2.21	-4,705
Electricity and Water	-1,962	-1,989	-2,204	-3.36	-3.09	-3.12	-10,269
Construction and Trade	18,049	2,443	13,265	2.80	0.34	1.69	38,519
Transport	-2,328	-1,988	-3,288	-1.68	-1.31	-2.00	-11,044
Commercial & Services	3,015	-897	649	0.26	-0.07	0.05	1,695

Source: Deloitte Access Economics

Note: The discount rate of 7% was used to calculate the NPV figure.

Source: Deloitte Access Economics (2014)

No amount of additional gas extraction in the Northern Territory or elsewhere will reduce gas prices in Australia as all gas will now go to the Asian market. As the NSW Independent Pricing and Regulatory Tribunal (IPART) put it:

The increase in regulated retail gas prices 2014/15 reflects increased wholesale gas costs as eastern Australia becomes part of a single global market for commodity gas, as well as increasing network charges.<sup>25</sup>

<sup>25</sup> Inquiry into the supply and cost of gas liquid fuels in NSW, IPART 2014. Accessed 10 July 2015, <[http://www.parliament.nsw.gov.au/prod/parlment/committee.nsf/0/efb3f0c1908f7b21ca257dc70005b1b2/\\$FILE/0023%20-%20IPART.pdf](http://www.parliament.nsw.gov.au/prod/parlment/committee.nsf/0/efb3f0c1908f7b21ca257dc70005b1b2/$FILE/0023%20-%20IPART.pdf)>

## 7. Big numbers, small benefits

Gas companies often cite the amount of money they invest or the value of the gas they sell as proof of the economic benefits of their projects.

However these numbers say little about benefits for Australians if the money invested in a project is spent on equipment from overseas, profits flow to foreign investors and the companies pay little tax or royalties.

The oil and gas industry in Australia is over 80% foreign owned,<sup>26</sup> which means that over 80% of the profits go directly off shore. It imports almost all its equipment and pays very low rates of tax. The theoretical company tax rate in Australia is 30%. All industries are able to claim exemptions and the average effective company tax rate of all industries in 2011/12 was 17.6%. That year the oil and gas industry in Australia paid an effective company tax rate of 5.4%.<sup>27</sup>

The Queensland LNG projects were approved without an estimate of royalty payments to the state government.

As the Reserve Bank of Australia concluded, while Australian production of LNG is expected to ramp up substantially over the next few years:

The effect on Australian living standards will be less noticeable than this given the low employment intensity of LNG production, the high level of foreign ownership of the LNG industry and, in the near term, the use of deductions on taxation payments.<sup>28</sup>

The big numbers for capital value or change in GDP tell us little about the benefit of gas exports to the wider Australian economy and community. As the Reserve Bank of Australia notes, these benefits are likely to be smaller.

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<sup>26</sup> Calculations by The Australia Institute based on published 2P reserves and production.

<sup>27</sup> Taxation statistics 2011–12, Table 4: Company tax, Selected items by industry, ABS 81550DO002\_201112 Australian Industry.

<sup>28</sup> Cassidy, N. and Kosev, M. (2015) Australia and the Global LNG Market, RBA.

## 4. The Industrial footprint of shale gas

One important way that unconventional gas development differs from other types of resource development is that it covers far greater areas. Mines are generally highly concentrated with relatively small footprints, while unconventional gas fields often cover tens of thousands of square kilometers with an industrial grid of wells, pipelines, access roads, compressor stations and water treatment plants.

The most mature shale gas field in the US, the Barnett Shale has an average of 1.15 wells per square kilometer, but is as high as 6 wells per square kilometer due to “infill drilling” needed to extract gas as fields deplete.<sup>29</sup>

Every shale gas well needs to be fracked multiple times. Every frack requires 11-34 million litres of water<sup>30</sup> equating to 360-11,000 truckloads and “80-300 tonnes of industrial chemicals”<sup>31</sup>. This is potentially an enormous increase in truck movements on the Territory’s roads and will inevitably impact other road users.

Pennsylvania in the United States has a mature shale gas industry. A gas industry study last year in Pennsylvania found that more than 6% of gas wells leaked, and up to 75% of wells could have some form of integrity failure.<sup>32</sup> In Pennsylvania more than 240 private drinking water wells have been contaminated or have dried up as the result of drilling and fracking operations over a seven-year period<sup>33</sup>

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<sup>29</sup> Shale Gas Information Platform SHIP. GFZ <http://www.shale-gas-information-platform.org/categories/operations/the-basics.html> Accessed 10/11/15

<sup>30</sup> UNEP Global Environmental Alert Service: Gas Fracking: Can we safely squeeze the rocks?

<sup>31</sup> Hazen and Sawyer, December 22, 2009. Impact Assessment of Natural Gas Production in the New York City Water Supply Watershed.

<sup>32</sup> Davies, R. J., Almond, S., Ward, R. S., Jackson, R. B., Adams, C., Worrall, F., ... Whitehead, M. A. (2014). Oil and gas wells and their integrity: Implications for shale and unconventional resource exploitation. *Marine and Petroleum Geology*, 56, 239-254. doi: 10.1016/j.marpetgeo.2014.03.001

<sup>33</sup> Concerned Health Professionals of New York & Physicians for Social Responsibility. (2015, October 14). Compendium of scientific, medical, and media findings demonstrating risks and harms of fracking (unconventional gas and oil extraction) (3rd ed.). <http://concernedhealthny.org/compendium/>

# Conclusion

Gas companies routinely exaggerate the economic and jobs benefits of their projects. Policy makers often accept these claims unquestioningly.

The Northern Territory is fortunate to have the Queensland unconventional gas experiment to reflect upon. The Queensland experience is that most of the economic benefits do not materialise, and serious collateral damage is done to existing industries and local communities.

If policy makers in the Northern Territory naively accept the economic claims of speculative gas companies and use taxpayer money to support this industry, Territorians will live the consequences for decades to come.