



Australia's Natural Gas Opportunity:

Fuelling A Manufacturing Renaissance

Supply Constraints Ahead for Gas

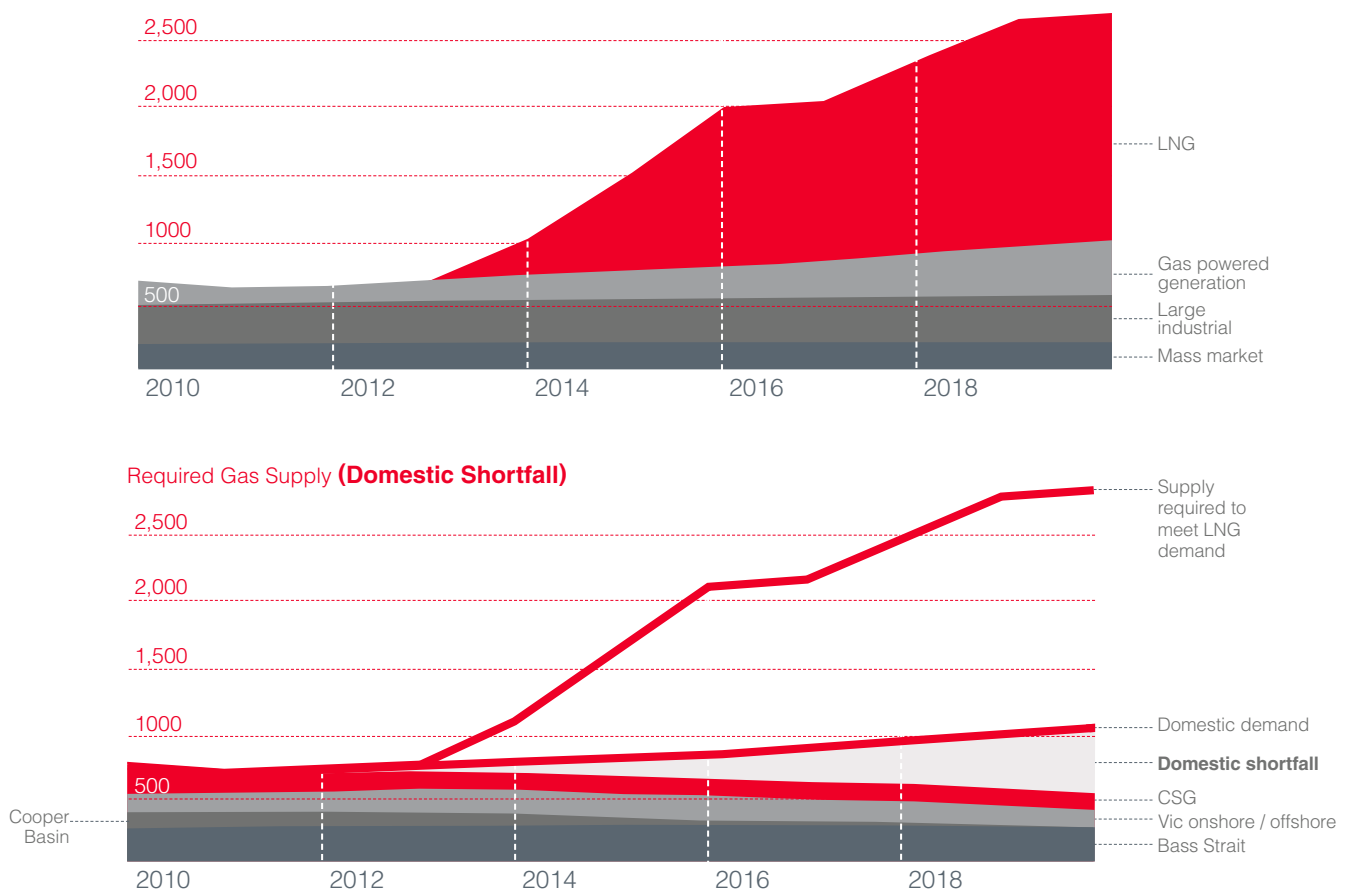
Natural gas is essential for Australian industry. It is used as an energy source and a raw material to manufacture a wide range of every day products. From glass to chemicals and plastics, fertilizers, cement, metals and ceramics, natural gas has been one of the essential elements keeping Australia's manufacturing competitive.

In the United States, as a result of recent development of domestic shale gas, natural gas has sparked a revival in

competitiveness at a time when the US needed it. It is driving lower utility bills for consumers, greater national energy security and billions of dollars in new industrial investments. "Re-shoring" – a return to on-shoring of production capacity—is becoming a phenomenon of US manufacturing in the second decade of the 21st Century.

In depressing contrast, in spite of our great wealth of gas resources, Australia's gas prices are expected to more than

Figure 1: East Coast Gas Supply and Demand
Projected Gas Demand



Courtesy: Incitec Pivot; Source: Gas Statement of Opportunities, AEMO, 2012; Morgan Stanley

double after 2014, as demand grows from Asia for our Liquefied Natural Gas (LNG) and as seven major LNG plants begin to produce. The scramble to fill this LNG capacity will put enormous pressure on Australia's domestic natural gas supply.

We have a plentiful supply of gas in Australia – the envy of many countries – and yet our domestic market is expected to experience a shortage—and prices will rise as a consequence.

A comparison of the Australian and US gas markets (see Figure 2 below) reveals on the one hand, a contestable market, one characterised by a high degree of competition, gas reserve development and transparent market pressures (the US); and on the other, a “market” that lacks such elements (Australia). Even allowing for differences in scale, the contrast is stark.

Figure 2: Australian Gas Price Conundrum

	United States	Australia
Price Industrial price (in Gigajoules)	\$3 GJ	\$3.50–\$14 GJ
Gas Reserves Proven / Potential (in Petajoules)	438,000 PJ 2.7 million PJ	150,700 PJ (95 % held by LNG companies primarily for export) 440,000 PJ
Producing (as a % of proven reserves)	7.75%	0.6%
Reserves earmarked for Export	0%	85–95 %
Domestic and export supply	6,300 producers for domestic market. No export at present	6 producers for domestic market. 10 major and numerous smaller companies hold 95% of reserves for LNG (produced for export)
Pipeline owners # of companies	160	4
Pipelines # of interstate and intrastate kilometres	480,000 km	25,000 km
Capital invested and planned in LNG infrastructure	\$10 billion (= one plant proposed)	\$156 billion

Source: EIA, ABARES; Dragoman Global Analysis

Enabling Manufacturing Growth

Sound Policy Attracts Investment

Certainty of natural gas supply at reasonable pricing can help create thousands of high-paying jobs as industry responds with investment and growth. Conversely, uncertainty in natural gas supply and prices can have a significant negative impact on industrial manufacturing, which has very elastic demand.

In the United States, the prospect of advantaged and abundant domestic gas has sparked investment in multiple gas-intensive industries (see Figure 3).

However, Australia has witnessed the closure recently of large manufacturers impacted by, among other things, the volatility of energy prices.

Australia's manufacturing activity fell in two consecutive months in 2012. The sector

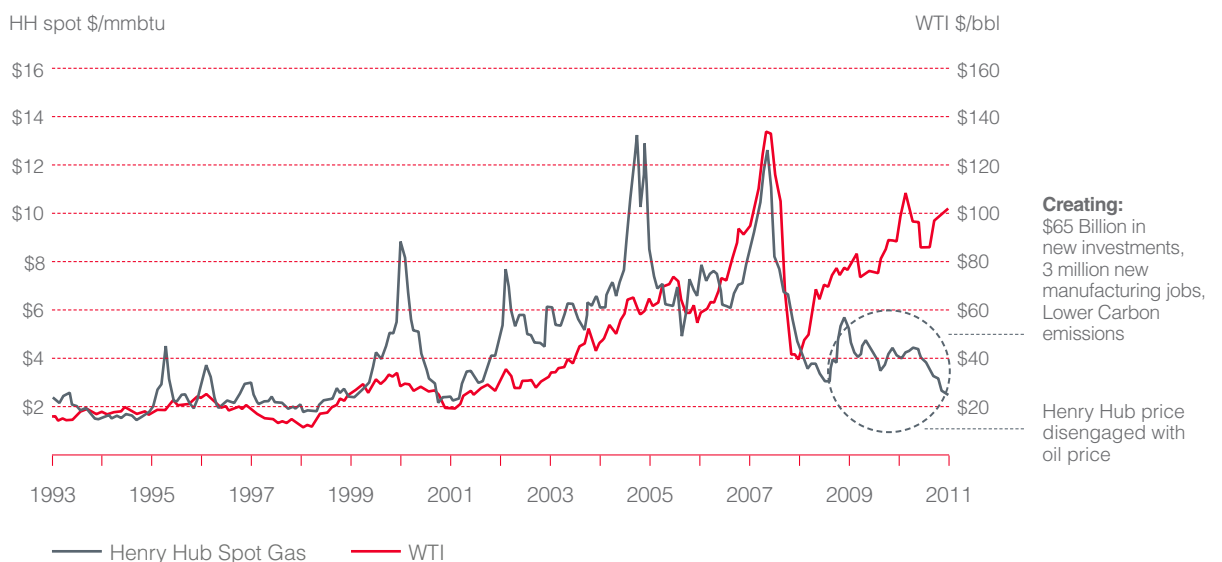
has lost 100,000 jobs nationally since the GFC, including thousands of highly skilled positions.

Investments in energy intensive processing and manufacturing are going offshore, while potential future commitments are unlikely to materialise under a policy regime which crowds out domestic gas in favour of LNG projects.

A thoughtful approach to gas policy, however, can ensure this tremendous national resource remains abundant, stable and affordable to all users.

As a nation, we must make the best use of our natural gas reserves to support and bolster Australia's manufacturing base, while helping to create new, higher paying jobs for the Australian workforce.

Figure 3: US Gas vs Oil Price

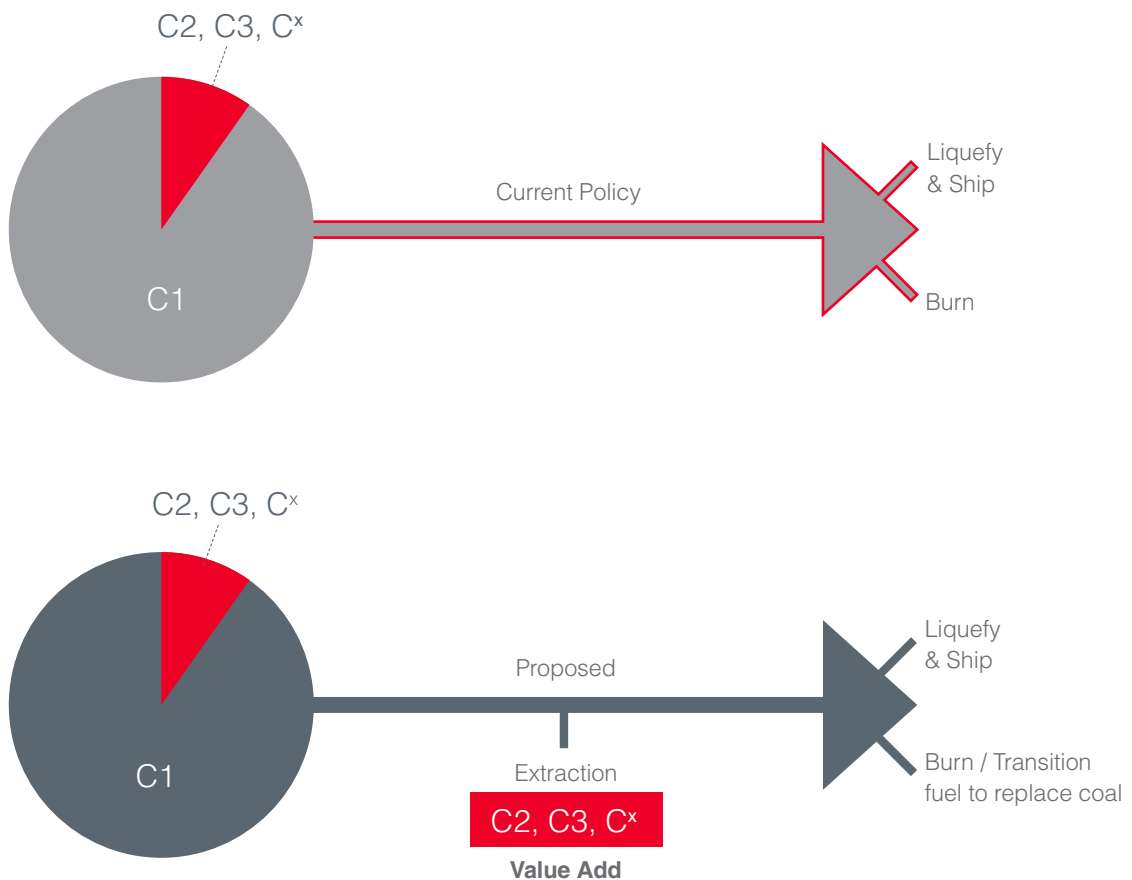


Making Best Use of a National Resource

Natural gas is essential as a raw material in the production of basic chemicals and for a range of industries including plastics, pharmaceuticals, fertilizers, paints and cosmetics, for which local supply is fundamental. When priority is given to value-adding to the resource, the valuable portion

- the "wet gas" or heavier hydrocarbon component (C2, C3, C4 etc) - is extracted and used to produce plastics and chemicals for everything from electronics and car components to tooth brushes.

Figure 4: A valuable resource
Industry uses natural gas to create jobs and add value.



Australian Gas

An Impaired Market

Market failure for domestic gas in Australia

Reserves	Reserves put aside for LNG development	<ul style="list-style-type: none"> • Concentrated ownership • Lease renewal process limits competition • Tightly held fields reserved for LNG export 	<ul style="list-style-type: none"> • Massive hike in wholesale gas prices in Eastern Australia emerging • Investments in energy intensive processing and manufacturing going offshore • Lowering greenhouse gas emissions inhibited by gas availability and pricing in spite of huge reserves • Countries like the US capitalizing on gas availability via increased investment and more jobs • Value add contribution not assessed in gas resource options for national benefit
Production	Domestic gas a low priority	<ul style="list-style-type: none"> • Domestic supply lowest priority • Gas components for feedstock valued as fuel rather than value add in downstream processing 	
Transport	Pipeline networks and market inhibits availability	<ul style="list-style-type: none"> • Select group of pipeline operators • Poor coordination for domestic infrastructure • Fragmented infrastructure accentuate market control 	
Marketing	Conflicts apparent in marketing structure	<ul style="list-style-type: none"> • Joint marketing arrangements inhibit gas market competition 	

Australia: Alone in the World

Australia's management of natural gas resources is unlike anywhere else. In markets around the world (Figure 5), governments play a role in managing the nation's resources to ensure that the greatest value is extracted for the country.

They prioritise the domestic use of gas, ensuring multiples of value, rather than

exclusively liquefying and exporting the gas as fuel.

In Australia, the gas market features policies which inhibit competition, such as joint marketing arrangements and a lack of transparency in pipeline pricing, and yet despite evident failure, the "market" rules.

Figure 5: International Natural Gas Management

Country	Activities	Driving Force
Algeria	LNG operations supply domestic requirements as a priority	National interest driven by Government
Australia	Focus on LNG export	No priority given to domestic value; no national interest test
Canada	Gas export to US after extraction of valuable Natural Gas Liquids (NGLs) - ethane, propane and butane (C2, C3 and C4 hydrocarbons).	Government priority of value creation for valuable components
Egypt	LNG operations supply domestic requirements as a priority plus local value adding	National interest driven by Government
Malaysia	Downstream value adding of extracted NGLs – export of LNG and large domestic gas sector	NOC – Petronas – National interest
Qatar	Previously largest LNG exporter but now turning to local value adding to gas	NOC – National interest
Russia	Domestic and industrial supply regulated at less than export pricing	NOC – GAZPROM
Saudi Arabia	Value adding driving use of gas and NGLs in world scale complexes	NOC Saudi Aramco – National interest
Thailand	Downstream value adding of NGLs from the Gulf of Thailand	NOC – National Interest
United States	Large on-shore gas reserves – Huge domestic industry based on gas . Shale gas boom creating investment in manufacturing and jobs	Competitive environment and a free and liquid market for gas.

Source: NOC - National Oil Company



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