



AUSTRALIA'S
GAS INDUSTRY
WHEN MARKETS COLLIDE

FOREWORD

Australia's Gas Industry: When Markets Collide is the fifth instalment in the ANZ Research In-Depth series. While this paper focuses primarily on Australia's domestic gas market, it also explores Asia's growing demand for liquefied natural gas (LNG) and the impact of that growth on the LNG market as a whole. The nexus with Asia is the common thread running through the In-Depth series because ANZ believes the future of the world will be increasingly determined by this region.

Asia will be the main driver of demand growth for LNG over the next five years. In fact the top five importers of LNG are now all based in Asia, which is a dramatic change from just ten years ago. Other significant developments for LNG include the emergence of a viable spot market, which could impact volumes sold under contract, and lower oil prices which are forcing LNG projects to adjust their cost base.

The Australian domestic market is also going through a series of unprecedented changes. After a strong run-up in investment, Australia's LNG projects are now set to export record volumes of LNG to the world. By 2016, ANZ expects LNG to have taken over from iron ore as the key driver of Australian exports.

However, the export volumes to which Australia's LNG projects have committed will most likely place pressure on domestic gas supplies, especially on the east coast, which in turn should push Australian domestic gas prices higher.

Consumers of gas, at the wholesale and retail levels, will all be affected by these changes, particularly those industries which rely heavily upon natural gas as feedstock, which include a wide array of businesses from grocery producers through to steel manufacturers.

Beyond the people associated with these industries and Australia's LNG market participants, this paper will have relevance for investors in Asia, anyone interested in the future of cleaner energy, anyone who uses natural gas at home and anyone with an interest in Australia's broader macroeconomic environment.

We hope you enjoy this paper. In terms of energy sources to watch, we believe LNG is not only a 'game changer' for Australia but will also be one of the fuels of the future, used throughout the world by countries searching for cleaner energy alternatives.

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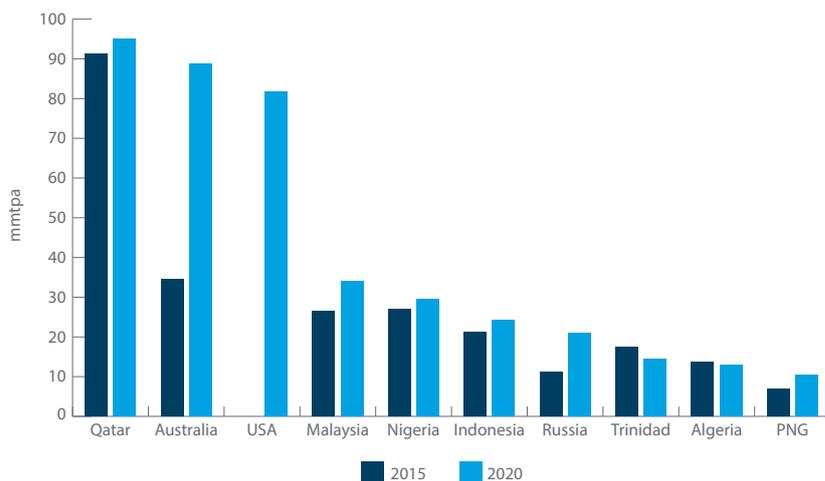
AUSTRALIA'S GAS INDUSTRY – WHEN MARKETS COLLIDE

This report examines the development of the LNG market in Asia and its impact on the Australian domestic gas market.

Key Points

- Australia's LNG export volumes will rise rapidly over the next few years as the extra capacity created by the LNG investment boom comes on-stream. By 2018 Australia will rival Qatar as the largest exporter of LNG in the world.
- The long term global outlook for LNG is strong. We expect international prices to increase over the next five years due largely to the rise of Asia, where clean energy demand and overall increases in energy consumption are outstripping supply.
- As a result, Australia's LNG exports could more than triple over the next five years (overtaking iron ore as the key export driver), substantially lifting Australia's GDP growth and playing a decisive role in restoring Australia's trade balance to positive territory.
- However, the growth of Australia's LNG export industry will put a strain on domestic supply, which in turn will lead to substantial price increases for Australian industry and households over the next two years.
- While wholesale prices could nearly double on the east coast between now and 2017, not all of that price increase will flow onto households. We expect retail prices to rise by approximately one-third on the east coast.
- A range of Australian manufacturers will be impacted by the increase in the gas price, especially in the chemicals and metals industries, where natural gas use is heavy and the capacity to pass on price increases is limited.
- In the absence of mitigation strategies, Australia's heaviest gas-consuming companies could see their aggregate profitability drop by a fifth and their return on equity halved.

Australian LNG exports will surge, putting pressure on domestic gas supply



Source: Wood Mackenzie, ANZ Research

The global LNG outlook

Total global natural gas demand is estimated to have grown by about 2.7% per year since 2000, but global LNG demand has risen even faster, growing by an estimated 7.6% per year over the same period. The rise in demand for gas has been driven by a combination of factors including: the shift away from relatively high carbon dioxide emitting energy sources such as coal; growing concern about the security of energy supplies (ie countries wishing to ensure they have a diverse mix of energy sources); and rising energy consumption in emerging markets, especially in Asia. As for the rise in demand for LNG, this is due to many Asian countries not having sufficient domestic gas supplies.

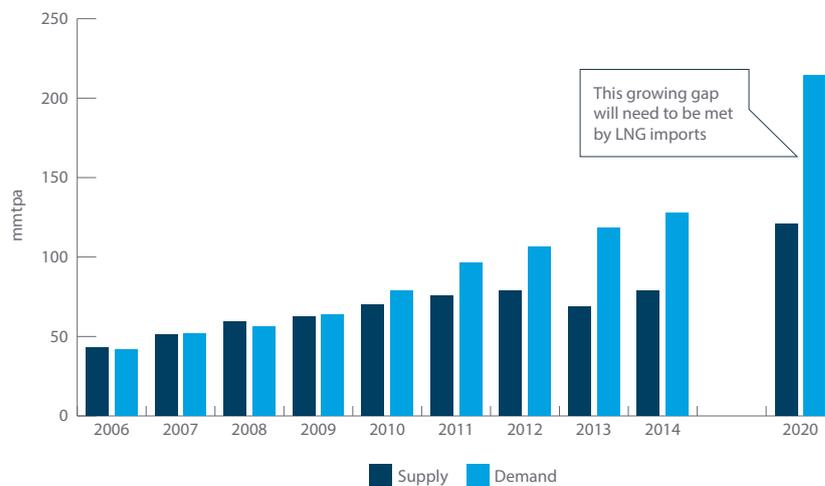
As a result of these forces, the number of countries with import capacity nearly doubled between 2010 and 2020, and more than 30 countries now have plans to build LNG import/re-gasification capacity.

A number of factors point towards increased consumption of LNG over the next five years, even in an environment of lower oil prices where the appeal of cheaper fuels like LNG is diminished. Chief among those factors is rising demand in Asia, where imports are increasingly supplementing the region's declining gas production.

We estimate that LNG demand in Asia will grow by over 40% by 2020 to reach almost 230mtpa. This growth will be driven primarily by China and India, where imports will nearly triple as a stronger focus on cleaner burning fuels sees gas take market share away from coal.

China alone has the capacity to substantially lift global LNG consumption rates, and we believe China's LNG consumption rate will grow strongly due to its quest for cleaner energy, lower LNG prices, and inadequate domestic supply.

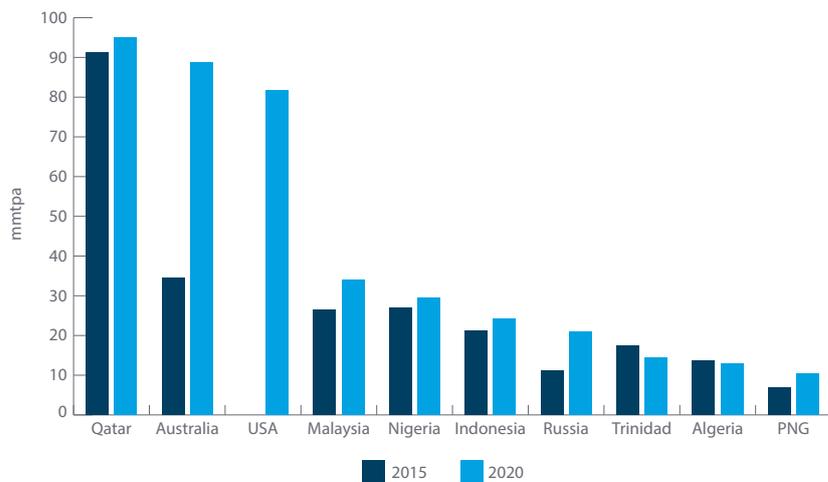
FIGURE 1. China's gas supplies falling behind demand



Source: BP, Wood Mackenzie, ANZ Research

Growth in demand for LNG, as a result of the forces outlined above, has induced a large number of LNG liquefaction/export projects to hit the market. After a few years of relatively low growth in new capacity, the market is now awash with gas. The recent commissioning of Papua New Guinea LNG, together with a range of Australian projects, has produced a fresh wave of supply. In combination with the current low oil price, this wave of supply is pushing the LNG price down from its record high of USD18/mmBtu in late 2012 to around USD13/mmBtu in 2014.

FIGURE 2. Major LNG exporters



Source: Wood Mackenzie, ANZ Research

Australia's gas industry

The gas market in Australia is set for a dramatic shake-up. Despite falling international LNG prices, domestic prices are likely to move higher over the next two years as demand from LNG export projects tighten the domestic market. Natural gas is now Australia's third largest energy resource after coal and uranium, and the development of the sector has reached the point where a range of LNG projects are dedicated solely to the export market. Those projects will be major contributors to Australian export revenues, but they will also put pressure on local supply. This has the potential to change the face of the domestic market – a market which has long been sheltered from higher international prices.

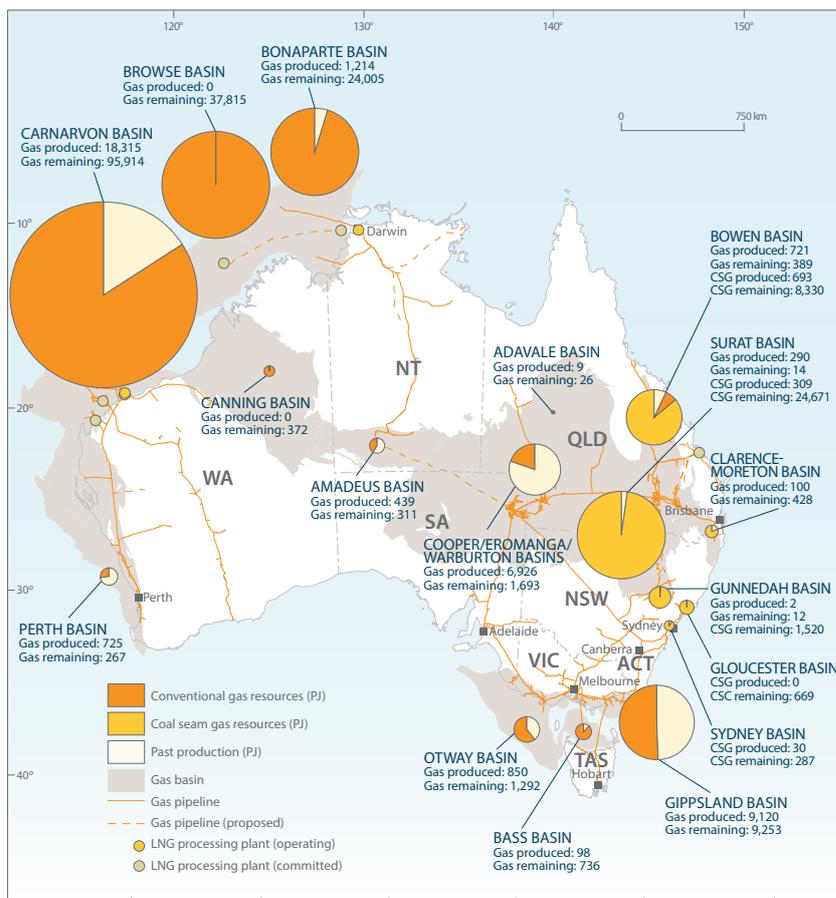
Australia is perfectly positioned to make the most of this growth because the Asia Pacific region will be the centre of LNG consumption growth and Australia's gas resources can help satisfy that growing demand. Australia has a strong market which supports not only domestic consumption, but also three large LNG projects – the North West Shelf (NWS) joint venture, the Darwin LNG project, and Pluto project.

In fact, gas production in Australia has more than doubled over the past ten years and this is only set to rise given the unprecedented level of investment in the sector over the past few years (approximately USD250bn since 2010). We expect Australia's LNG capacity to more than triple again over the next ten years, making Australia one of the biggest LNG exporters in the world.

Risks to domestic supply

Gas supplies in Australia have historically come from conventional sources off the west coast, but production rates from those sources are slowing and a range of unconventional sources are now becoming genuine contributors, chief among them being CSG (coal seam gas). Growth in CSG production has reached the point where it is now the leading source of supply on the east coast of Australia.

FIGURE 3. Australia's gas resources



CSG = coal seam gas; LNG = liquified natural gas
 Note: For remaining resources, conventional gas values represent total demonstrated resources; CSG values show 2P reserves.

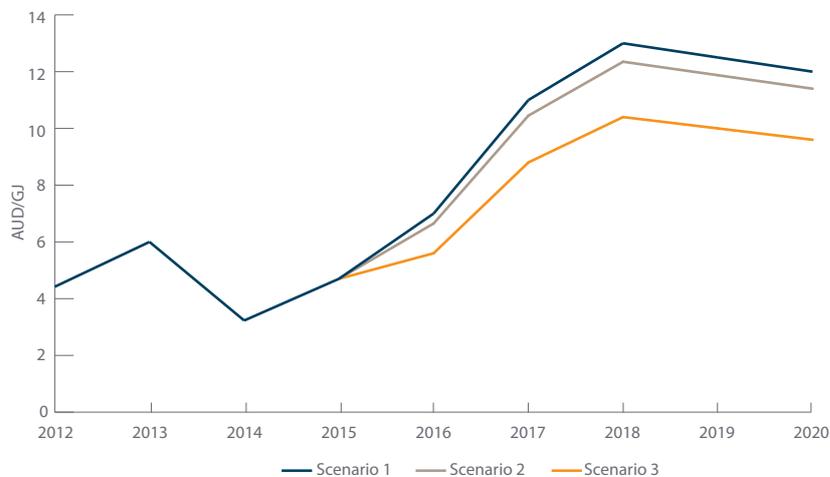
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The CSG produced from a host of gas discoveries in the Queensland coal basins has fuelled the recent expansion of export capacity on the east coast. This sudden change to the eastern market has created various risks and challenges, the main one being a rising strain on domestic supply. A range of factors will compound this supply problem:

- While the Queensland projects are expanding overall LNG capacity, they are unlikely to produce enough gas to meet the ambitious export obligations which they have committed to under contract, meaning they will have to rely on supplies which have previously served the Australian market.
- Long term contracts are due to expire over the next couple of years, meaning new sources of supply will need to be secured for the domestic market.
- Gas pipelines on the east coast are inflexible and don't allow the gas to move to where it is needed most. Current prices do not create the necessary incentive for pipeline owners to address those limitations.
- Regulatory constraints, combined with social and environmental concerns, are acting to slow CSG production, especially in New South Wales.

With demand for gas in the eastern states expected to increase from around 600PJ to over 2,000PJ by 2017 due to export expansion, significant natural gas development would be needed to expand supply sufficiently. But an examination of the current break-even costs for LNG development, together with low gas contract prices, shows that there is limited incentive to fund further expansions.

FIGURE 4. Domestic gas price scenarios – Brisbane



Source: AEMO, ANZ Research

As a result of these forces, we believe there is a greater-than-even chance that wholesale prices will rise from their current AUD3–4/GJ level to over AUD7–8/GJ in NSW and to AUD9–10/GJ in Queensland. In turn, this will flow through to higher gas bills for households, albeit to a lesser degree because usage costs for households are just a portion of the overall gas bill (the rest being network and retail costs). We expect gas bills for medium-use households in Sydney and Brisbane to rise by 33% and 29% respectively.

Impact on business and the economy

The expansion of Australia's LNG export industry will have significant and long-lasting benefits for the Australian economy. We expect LNG exports to increase from 26mmtpa in 2014 to nearly 88mmtpa in 2020, and the value of those exports could grow above AUD50bn by 2020, which will help move Australia's trade balance back into positive territory. Governments, both Commonwealth and State, will also benefit from higher taxation receipts through growth in mining company taxes, higher petroleum resource rent taxes, as well as increased state royalties (although depreciation charges are likely to delay the initial lift in taxation receipts until the end of the decade).

While high levels of foreign ownership in LNG companies means the bulk of profits will flow offshore, higher dividend payments for Australian shareholders should produce benefits for the Australian economy too.

However, not all of the changes will be positive. The LNG development phase has been capital and labour intensive, so the completion of various LNG projects will see investment fall sharply over the next two years and LNG-related employment will decline. Real household incomes will also be reduced by higher gas prices.

Those Australian manufacturers which are the heaviest users of natural gas, and cannot pass cost increases onto their customers due to international competition, will be hardest hit by the forecast gas price increases. We expect the following sectors to be most affected: food, beverage and grocery manufacturers; wood, pulp and paper manufacturers; iron and steel product manufacturing; non-ferrous metals manufacturing; and chemical products manufacturing.

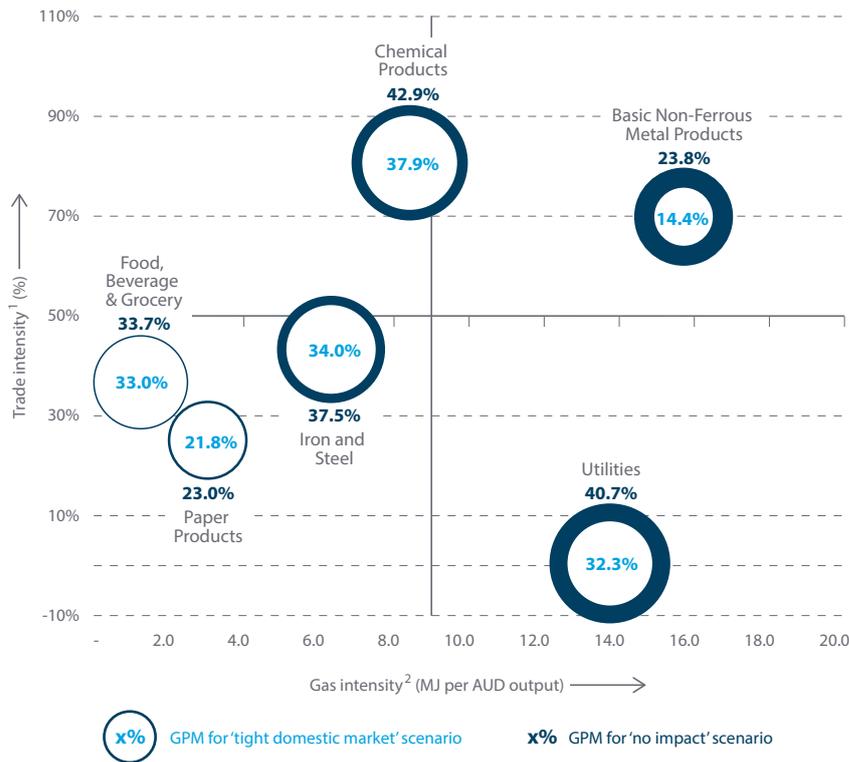
If Australia's major gas-consuming companies take no action to mitigate the cost impact of our base case for prices, within five years aggregate profitability across these companies could decline by 19%, ROE could halve, and total debt to EBITDA leverage could rise by 31%.

FIGURE 5. 2016 forecast impact of LNG price shocks on industry profitability

High gas intensity of production and highly exposed to competition from external trade = highly exposed to gas prices.

Bubble size represents the gross margin. The line width of the bubble represents the degree of impact on the gross margin as a difference between the 'no impact' scenario and 'tight domestic market' scenario.

Gross profit margin



Notes:

1. Trade intensity: defined as the ratio of the value of imports and exports to the value of domestic production.
2. Gas intensity: defined as the natural gas consumption (in MJ) to value added (AUD).

Source: Deloitte Access Economics, Capital IQ, D&B, WSJ, Manufacturing Australia, ANZ Analysis

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