Gas is gas, but markets matter

ANU Energy Update 2015

8 December 2015
Global commitment to climate change is a big deal

If governments meet their Paris commitments, the energy path is one that is consistent with a global temperature increase of about 2.5-3 degrees Celsius.

We have less than half our carbon budget remaining and are set to exhaust it by 2040

Source: IEA World Energy Outlook 2015
Gas demand: blue skies for a clean fuel?

Cost competitive in resource-rich countries

More flexible than coal or nuclear

A clean fuel of transition

• Gas combustion is free of many of the other by-products than come from the combustion of coal.

• Gas-fired power stations can operate to meet peak or intermediate demand, thereby complementing energy supply available on supply (e.g., wind).

• CO₂ emissions from the combustion of gas to produce electricity are 25-40% of coal.
Gas demand: clouds on the horizon?

A dirty fossil fuel

• The full life-cycle emissions of gas have been questioned
  
  • The oil and gas sector is the largest industrial source of global methane emissions (around 55 Mt).

• The technology to deliver unconventional (coal seam and shale) gas is strongly opposed in many areas
  
  • Water contamination and/or depletion

  • Seismic activity

  • Air or ground pollution.

• The rapid growth in low-cost gas may threaten the viability of renewable energy even with carbon pricing.
Gas supply: large enough?

- Remaining proven reserves at 216 tcm represent more than 60 years of current demand.

- Total estimated resource of 781 tcm is 44% unconventional gas. This represents 195 years of demand under the IEA’s 450 scenario.

- Unconventional gas provides 60% of growth to 2040.
Australia: A 2018 energy superpower?

Coal:

• In 2013-14, Australia exported 375 million tonnes of black coal
• Australia accounted for 27 per cent of total world coal trade
• Coal export earnings were $40 billion, $17 billion from thermal coal and $23 billion from metallurgical coal

Gas:

• In 2013-14, Australia exported 24.1 million tonnes of liquefied natural gas
• Australia was the third largest LNG exporter
• LNG export earnings were $16 billion
• Additional 62 million tonnes of LNG capacity will make Australia the largest exporter

Price expectations could create seemingly perverse outcomes
Markets matter and they generally work

Inevitable implications for our domestic market

Source: World Bank
Power: switching to gas was expected

Source: Grattan internal analysis
But, the short-medium term is more challenging

Source: Grattan internal analysis
So, projections are highly uncertain

Domestic demand for gas-powered generation
Annual demand (PJ)

Source: AEMO, 2012 Gas statement of opportunities

The range of outcomes is very wide
The Australian context

- Total 2P reserves of 139,000PJ, 31% CSG
- Domestic consumption 1400PJ
- Initial CSG exports 1300PJ per annum
- Lock the gate: Moratoria in NSW and Victoria
- Domestic price increases: ACCC review of the gas wholesale market
- Tennant Creek – Mt Isa Pipeline
- Gas priced out of power generation
So, what’s next?

- Climate policy is unlikely to drive a switch to gas in Australia, although such results are sensitive to relative prices (coal, gas and carbon).

- Uncertainty of international and domestic demand and supply has never been greater, particularly regarding climate change and energy security policies.

- CCS remains technologically proven, but commercially and politically questionable.

- Unconventional gas supply depends on alignment of policies, resources/technologies and costs and all three look highly uncertain.

- Maybe we just won’t need that much?

   All forecasts are wrong – some are useful.
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The world is committed to addressing climate change

Global energy-related CO\textsubscript{2} emissions (Gt)

- Global: limit the maximum global average temperature increase to no more than 2 degrees Celsius
- EU: at least 40% domestic reduction in emissions by 2030
- USA: reduce CO\textsubscript{2} emissions by 26%-28% below 2005 levels in 2025 and "to make best efforts to reduce emissions by 28%.”
- China: achieve the peaking of CO\textsubscript{2} emissions around 2030 and "to make best efforts to peak early”
- Australia: 26-28% below 2005 level by 2030

Source: IEA WEO 2015; Asian Development Bank TA