The Global Gas Glut

Implications for the Northern Territory

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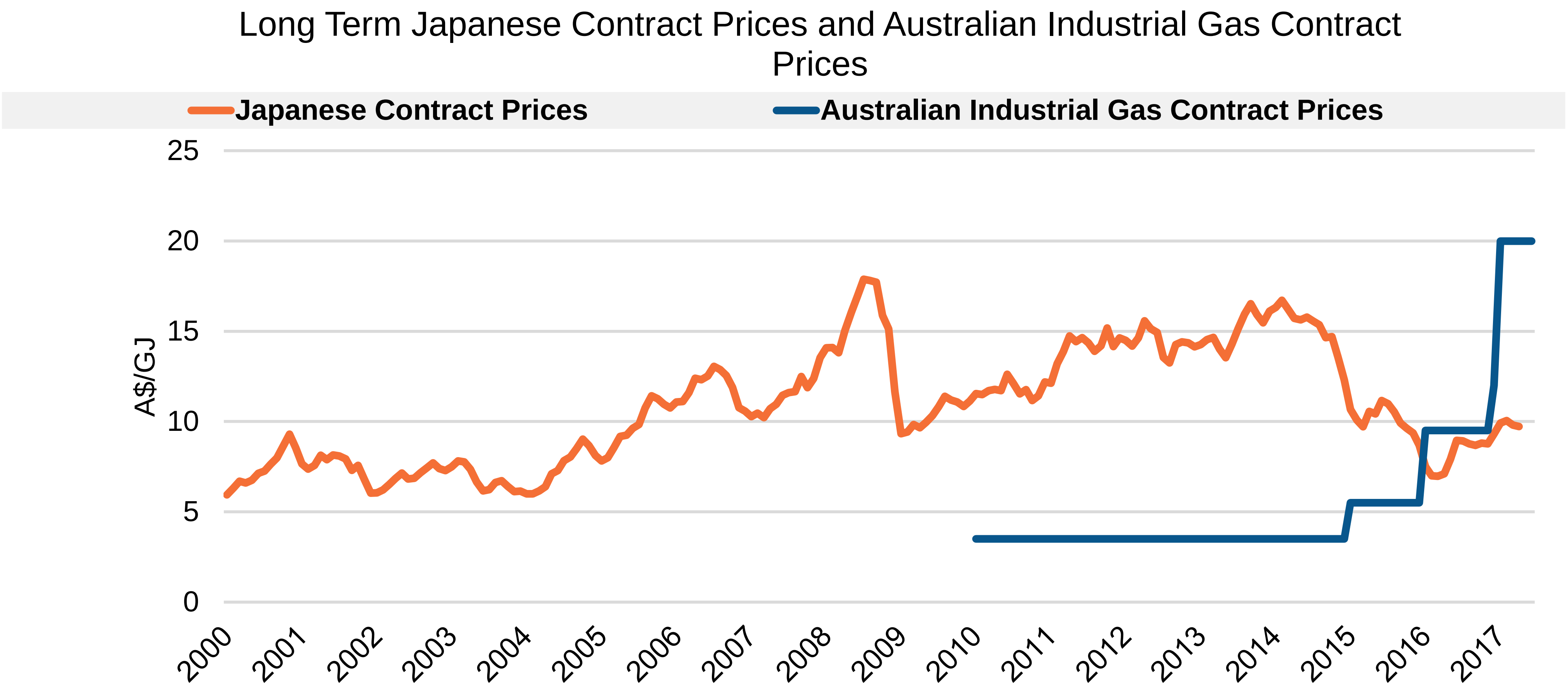
Introduction

- There is a global glut of LNG that now extends out to 2030
- Excess supply and faltering demand
- The Global Gas glut keeps getting bigger and longer
- Globally the contract pricing mechanism is breaking down
- The mistakes at made at Gladstone are being repeated in the Northern Territory
- Producing high cost onshore gas is not economic in a low cost gas world
- Government support for the industry is a mis-allocation of limited government resources

Global Supply/Demand Balance

- Global Liquefaction capacity as at January 2017 was 340 MTPA.
- Global imports were just 263 MTPA in 2016
- The market closed 2016 29% oversupplied.
- Global liquefaction capacity is expected to grow by an additional 34% between 2017 and 2020 with 116 MTPA under construction.
- There is a consistent and well documented history of both global and domestic forecasters over estimating energy demand. This extends to official forecasts from AEMO, IEA etc

Global gas prices have crashed



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Quotes from Jean- Marie Dauger President of the GIIGNL

“Looking at future years, with Australian projects ramping-up and new trains from the United States progressively coming online, the global LNG market could become oversupplied until the mid

2020’s. “

“Nevertheless, surplus capacity could be progressively absorbed by additional imports and/ or by shut-ins, both as a consequence of low price levels, resulting in a market rebalancing in the last part of the decade.”

Qatar opens North Field

- Qatar has lifted a self imposed moratorium on development of its North Field.
- Qatar will ramp up its capacity in five to seven years from 77mtpa to 100 mtpa re-asserting its position as the number one global producer of LNG.
- This is the equivalent to building another Gladstone

Outlook in Asia's biggest market down not up

- Japan is comfortably the worlds biggest importer of LNG accounting for 32% of global trade
- After falling for the previous 2 years Japanese imports fell again in 2017 by a further 2% to 83MT
- All forecasters had demand up in Japan. The reasons they were wrong are:

1. Underestimation of the effect of take up of renewables
2. Lack of understanding of energy intensity
3. Poor understanding of energy efficiency

China growth in Gas Consumption but LNG growth questionable

- Fundamental mistake to conflate gas consumption rise with a rise in demand for LNG
- We see five principal dynamics that will crimp demand for LNG in China:

1. The rise of renewable energy
2. The growth of a domestic gas industry
3. Global geopolitics affecting energy security issues
4. Increased Russian supply
5. Fugitive emissions

Oils ain’t Oils, gas contracts ain’t gas contracts

- The RBA says contracts have become more flexible since the 1990s and "incorporate additional features to address pricing risk".
- "Some newer contracts have flexibility on fixed destination clauses and take-or-pay commitments, and a greater share of sales contracts are under more-flexible free-on-board (FOB) agreements. Long-term contract price arrangements can often be subject to periodic renegotiation (e.g. every three to five years). Renegotiations may occur due to bilateral agreement or can be triggered contractually by large oil price movements."

Contract system breaking down

- Contract system based on 3 pillars:

1. Oil based
2. Long term
3. Destination Clauses

- Contracts subject to re-negotiation
- New contracts written linked to the Henry Hub spot price & are shorter term
- Contract defaults already occurring
- India's Petronet LNG has managed to recast its contract with Qatar's Rasgas. The renegotiation cut prices in half over the 25 year contract
- Japanese Fair Trade Commission has held the destination clauses in contracts are invalid on competition grounds . Tokyo Gas, the worlds biggest single importer is renegotiating contracts now.

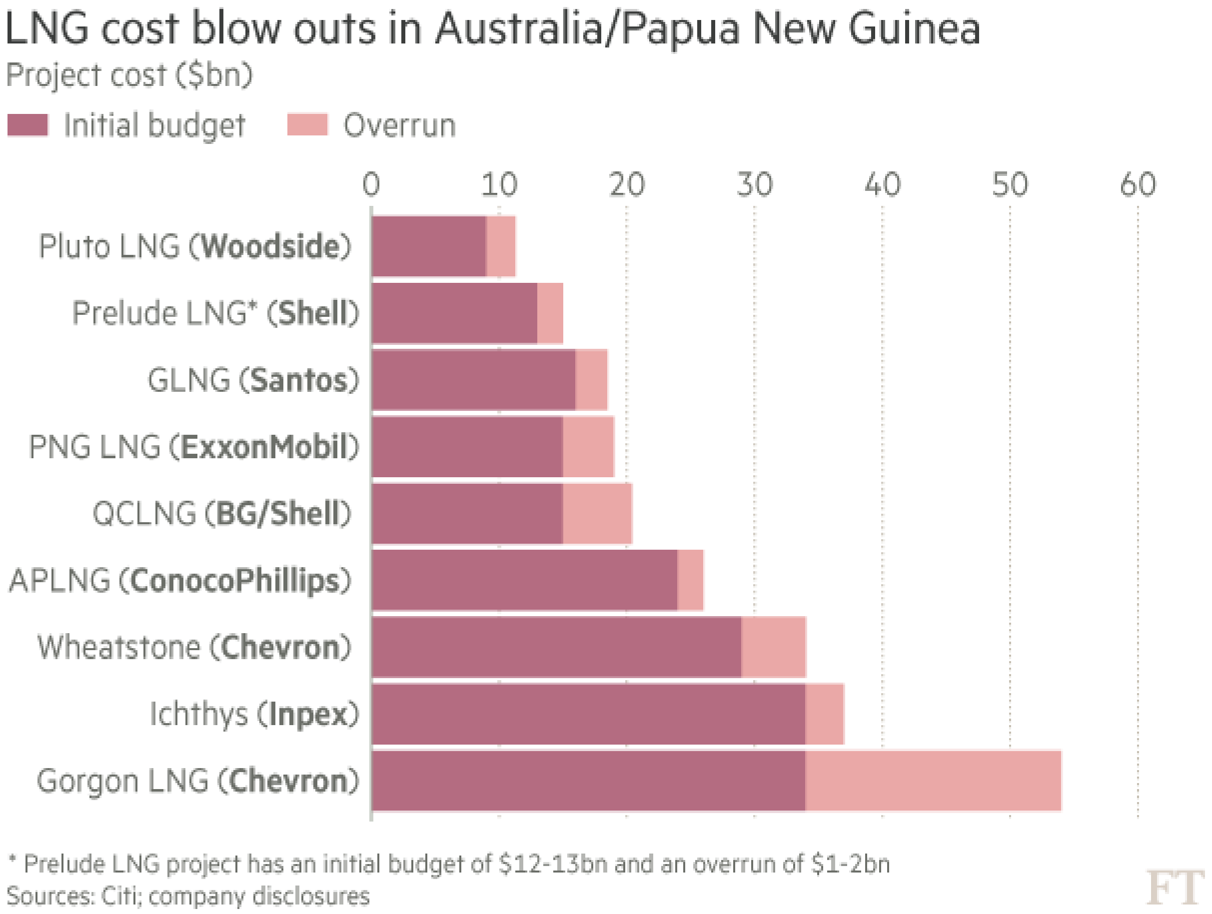
Tokyo Gas is renegotiating contracts now

"We have re-negotiations under way, including price review,"

said Takashi Higo, senior general manager at the gas resources department of Tokyo Gas .

"There will be tough negotiations (with suppliers) and it will take a lot of time,"

Gladstone Plants 1st Mistake



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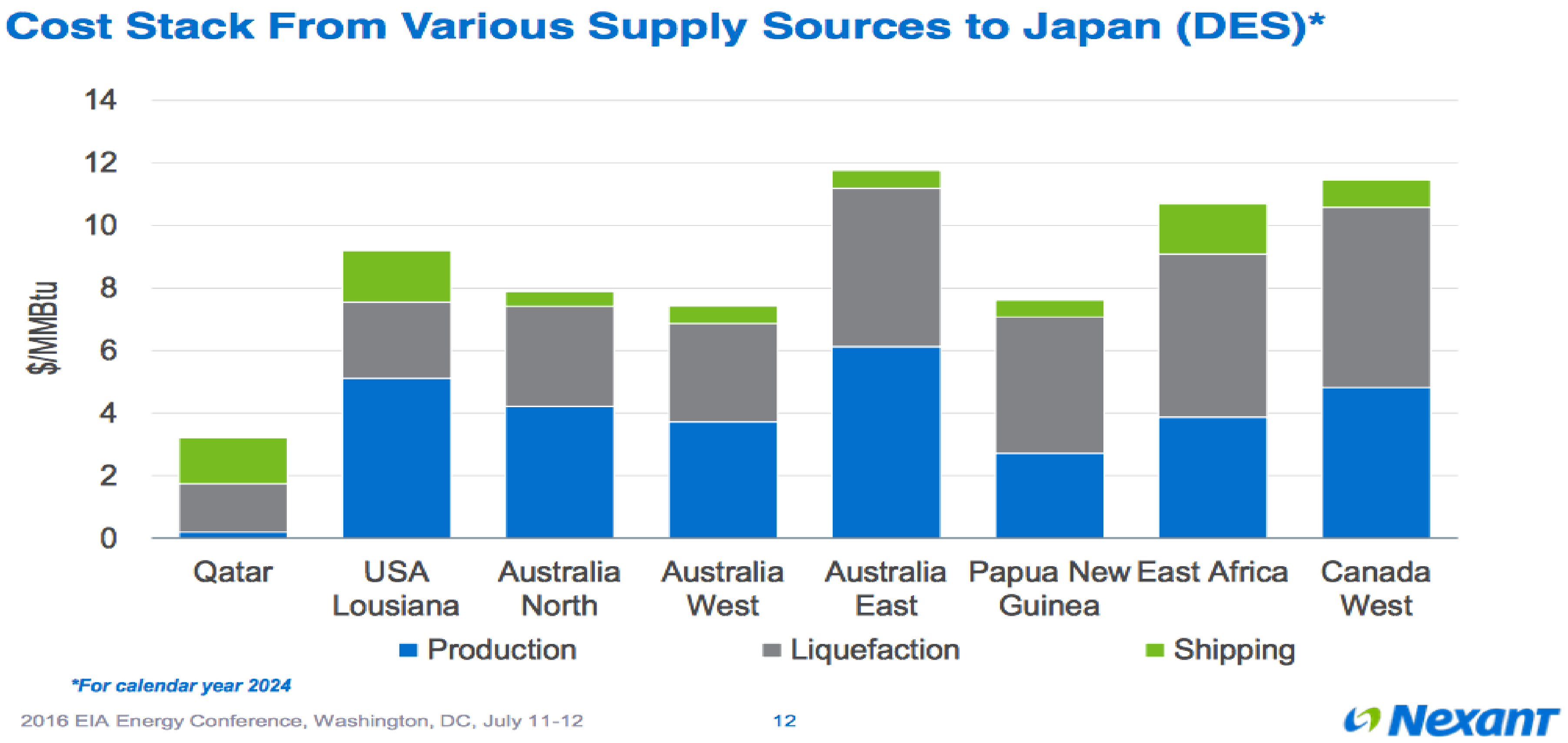
Gladstone Plants 2nd Mistake

- Operating and Development costs for the Coal Seam Gas fields that supply the plants at Gladstone were vastly under estimated.
- From Santos' Gladstone LNG (GLNG)Environmental Impact Statement(EIS):
- *"Morgan Stanley (2008) estimate that industry-wide operating and development costs for CSG are in the order of $2.20/GJ to $2.70/GJ, however as resource quality declines and recovery becomes more difficult, these costs are expected to increase, notwithstanding any technological break throughs."*
- Current CSG field costs range from $3.55 through to $8.50/GJ. Essentially the cheapest field on the east coast of Australia cannot produce gas at the top end of the estimated industry wide operating and development costs.

Cost Curves



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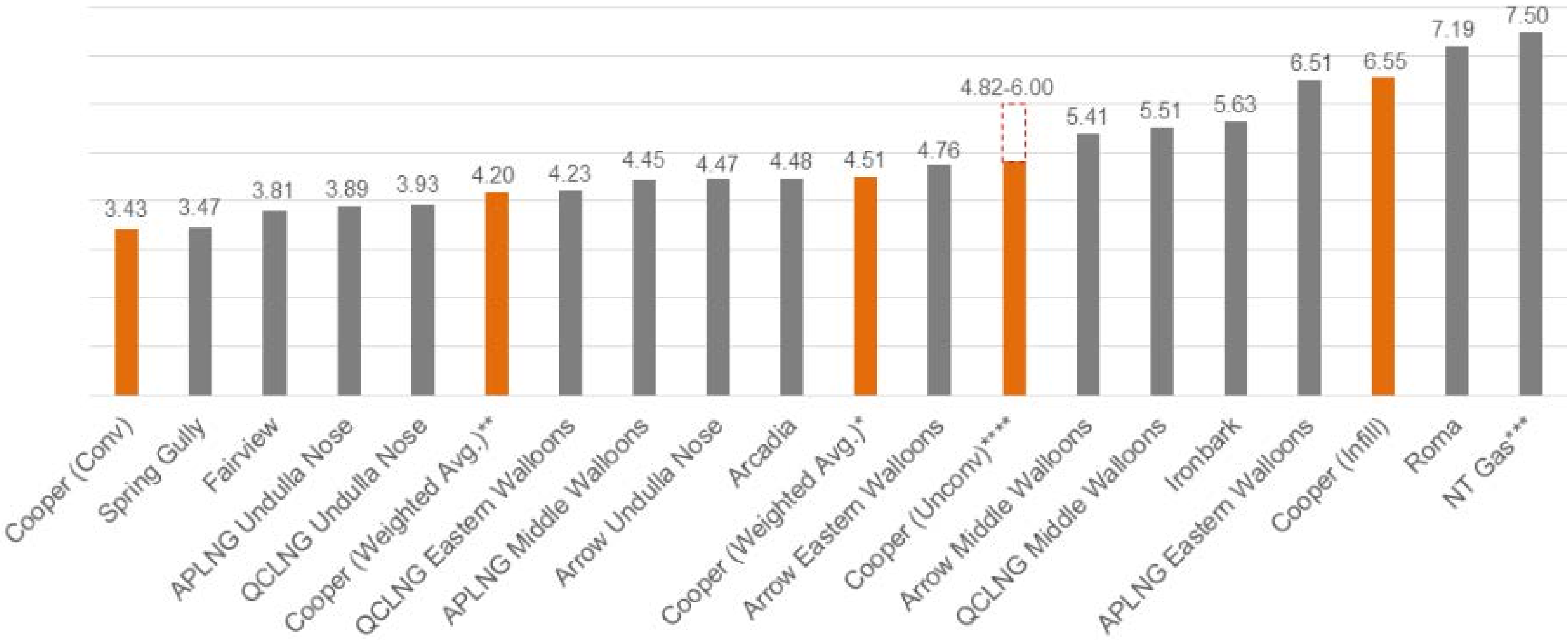
NT Onshore gas at the top of the cost curve (A$/GJ)



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Queensland Gas royalties have disappointed

"Queensland's large-scale gas exports began in 2014, and Queensland Treasury had predicted that they'd be pulling in over $660 million of royalties in the next year"

By 2017 they are only estimated to make $97m

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Summary

- The global gas market is in a state of long term glut
- This will only be resolved by high cost production being shut in
- Gladstone plants are high cost plants & the NT onshore gas is a globally uncompetitive source of gas – very high production, liquefaction and transport costs
- The Northern Territory is at risk of repeating the mistakes of the past:

1. By developing a high cost industry in a low cost gas world
2. By believing an industry that has a demonstrated ability to overestimate reserves and under estimate costs
3. By ignoring the inevitable technological change that is occurring within the energy industry lessening demand for fossil fuels
4. By being lured to believe in high royalty streams that have not materialised. It has cost the Queensland government more than they have made