Value Generation in the Gas Sector

Prepared for Spotlight on Energy

POTEN & PARTNERS

March 2018

Background

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Introduction

- T&T Gas Master Plan (2015) identified the following (through 2014):
  - Ammonia had provided greatest benefit per unit to T&T over past decade.
  - LNG had performed relatively poorly due to particular marketing arrangements.
    - LNG market conditions / prices were strong over the period.
    - LNG would have performed at least as well as ammonia under different arrangements.
  - Greater value required from LNG
    - Could be the most attractive monetisation option under revised marketing arrangements.
    - Expiry of existing Train 1 arrangements in 2018 presented an opportunity.
- The GORTT retained Poten to update the analysis through 2017

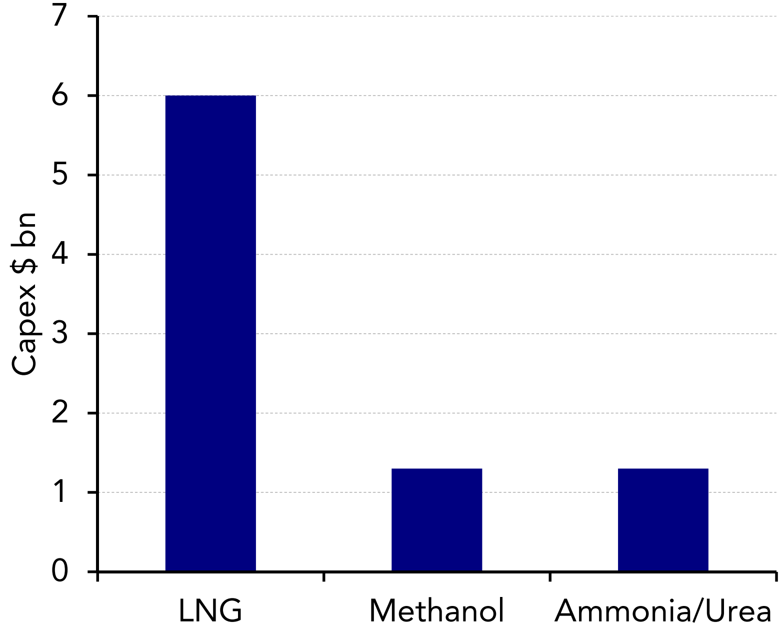
T&T gas based industries are highly capital intensive

LNG value chain has very high capex

- T&T industries are worldscale
  - Captures economies of scale
  - Global petchem markets smaller than for gas (LNG)
  - Offtake supported by producers

- LNG has huge investment costs
  - Single train project ~$6 bn
  - Long term (20 yr) sales contracts support investment
  - Contracts entered into at development phase

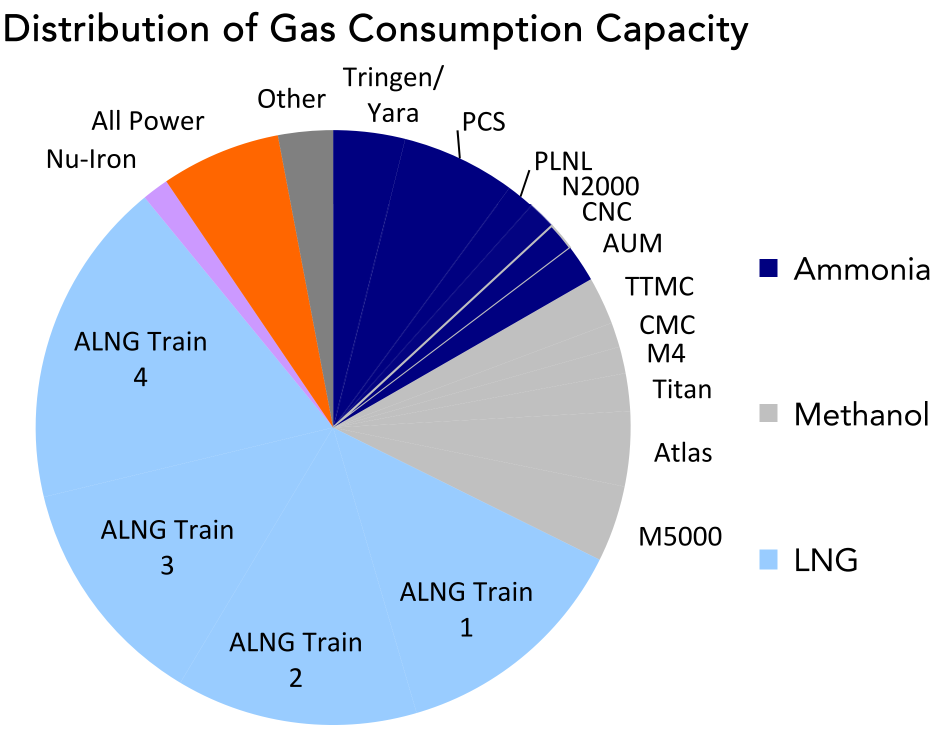
Capex for New Worldscale Plant (Current Costs)



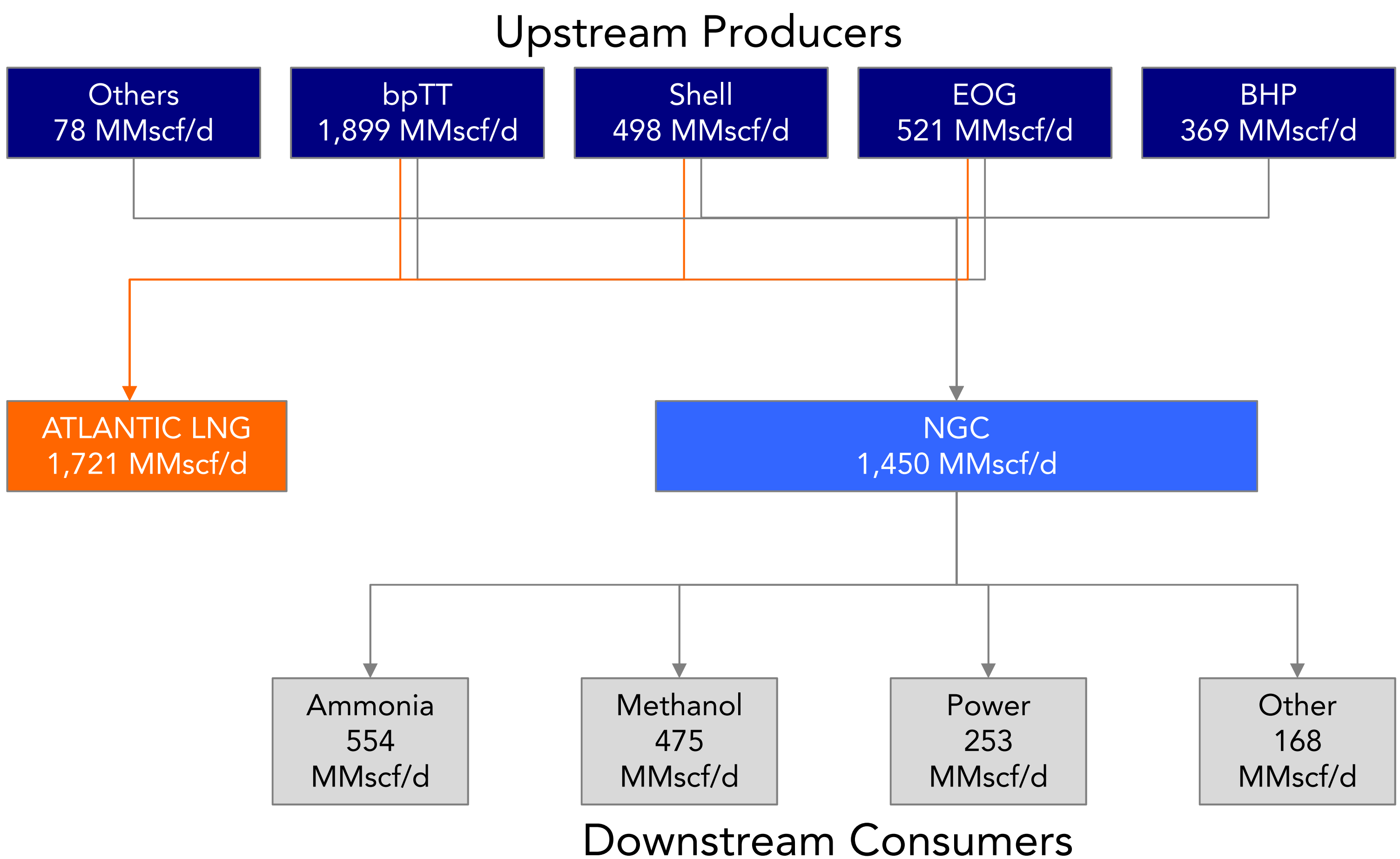
	LNG	Methanol	Ammonia/Urea
Feed Gas (MMscf/d)	740	125	80
Reserves (Tcf)	5.5	0.9	0.6
Output (MMt/y)	5	1.5	1.2 (Urea)

Existing downstream portfolio could consume ~4.2 Bscf/d of gas

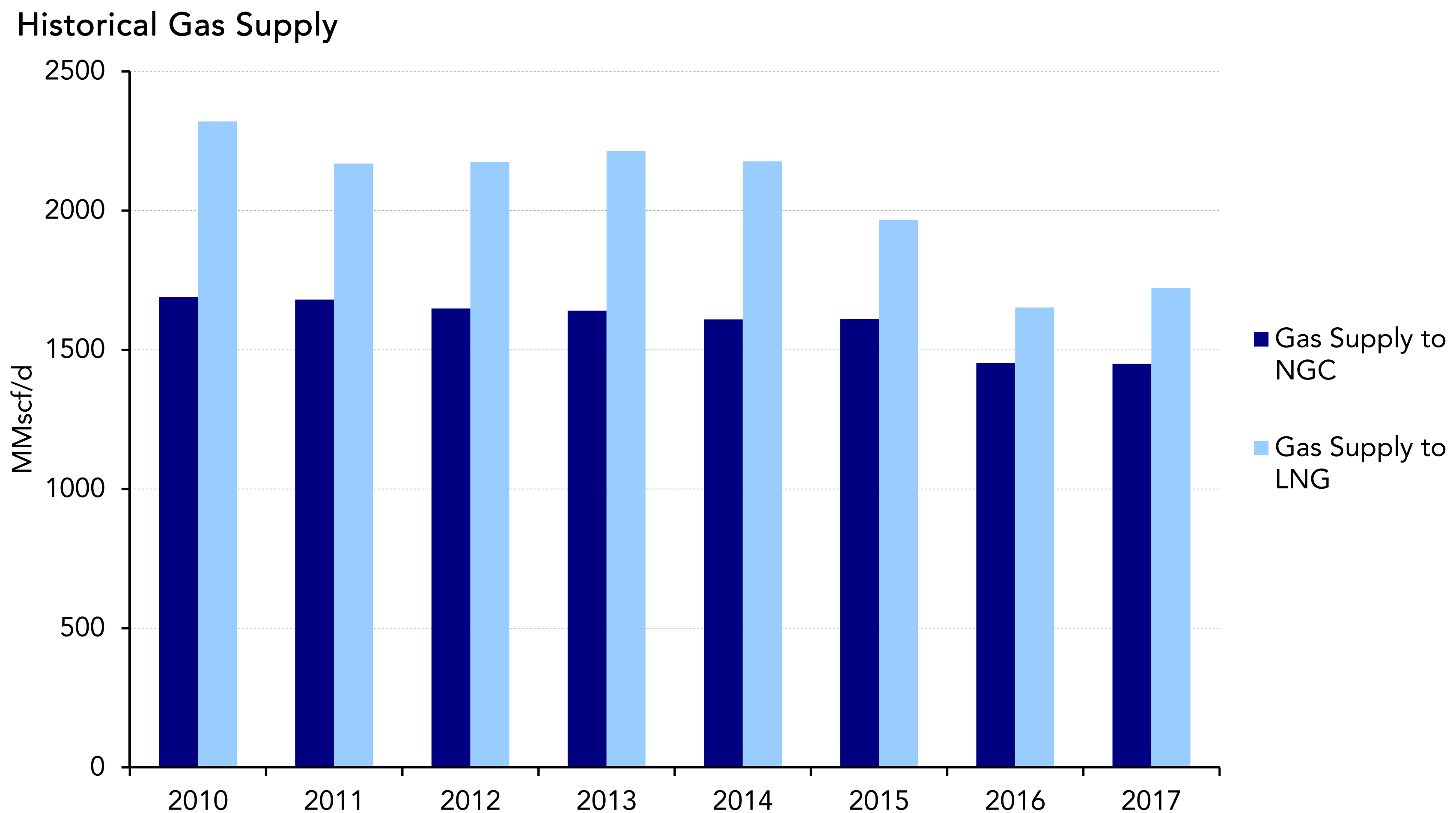
- LNG dominates gas the downstream portfolio
  - ~57% of total capacity
- Petrochemicals also very significant
  - Ammonia (& derivatives): ~17%
  - Methanol: ~16%
    - Some ammonia and methanol capacity currently shut down
- Other
  - Power: ~7%
  - Other: ~4%



The gas supply to consumption picture in 2017



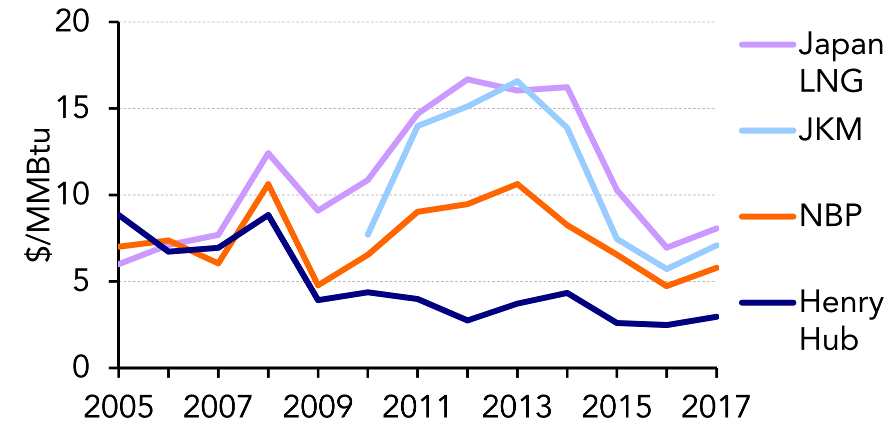
Supply to NGC and LNG have dropped since both peaked in 2010: 14% decline for NGC through 2017 & 26% for LNG



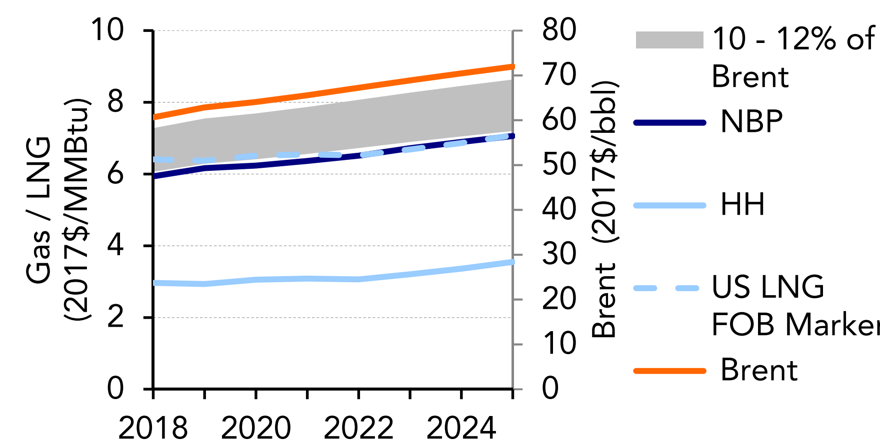
High global LNG prices from 2010-14. Prices forecast to remain at more modest levels

- LNG is now a strong buyer's market
  - Increasing supply competition, particularly from the US
  - Huge export capacity now under development.
- Global gas pricing remains diverse
- ALNG's base markets less attractive over recent years
  - ALNG sales based on supply into traditional Atlantic markets (US, Spain).
- Pricing set to remain influenced by oil but HH-based supply brings a new dynamic

Gas / LNG Price History

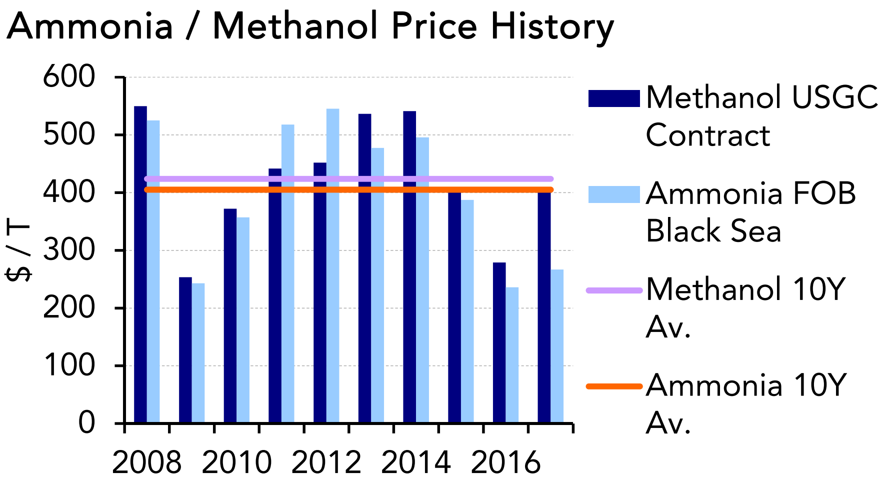


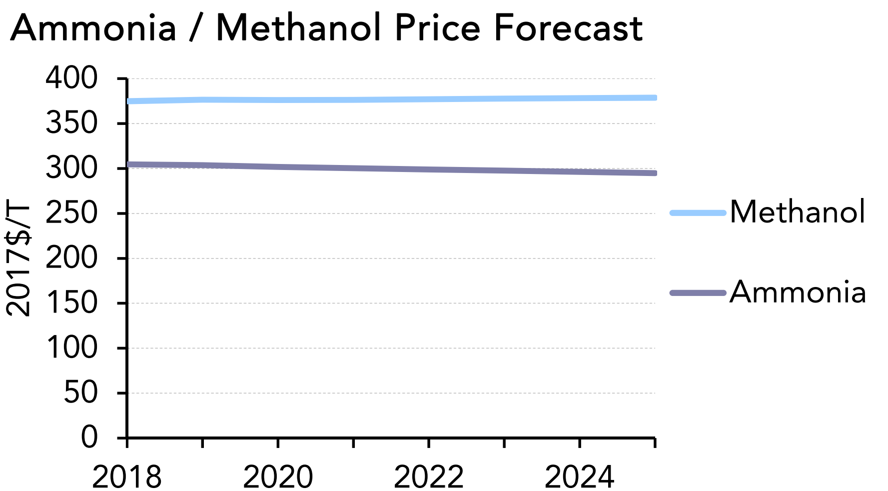
LNG (& Brent) Price Forecast



Ammonia & Methanol prices also robust from 2011-14 but now lower

- Demand growth expected to remain solid
  - Methanol demand driven by China: fuel additives & chemicals market.
  - Ammonia driven by global fertiliser demand.
- But pricing likely to remain under pressure as supply increases
  - Supply of both commodities expected to ramp up from US, driven by low HH gas prices.





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GORTT Take / Commercial Arrangements

T&T receives revenue from all three stages of gas value chain

FLOW OF GAS

Upstream

Resource rent

- Royalties
- Fiscal Terms
- Govt Co. profits/dividends
- Payroll tax

Midstream

- NGC / PPGPL profit tax
- NGC / PPGPL profits/dividends
- Payroll tax

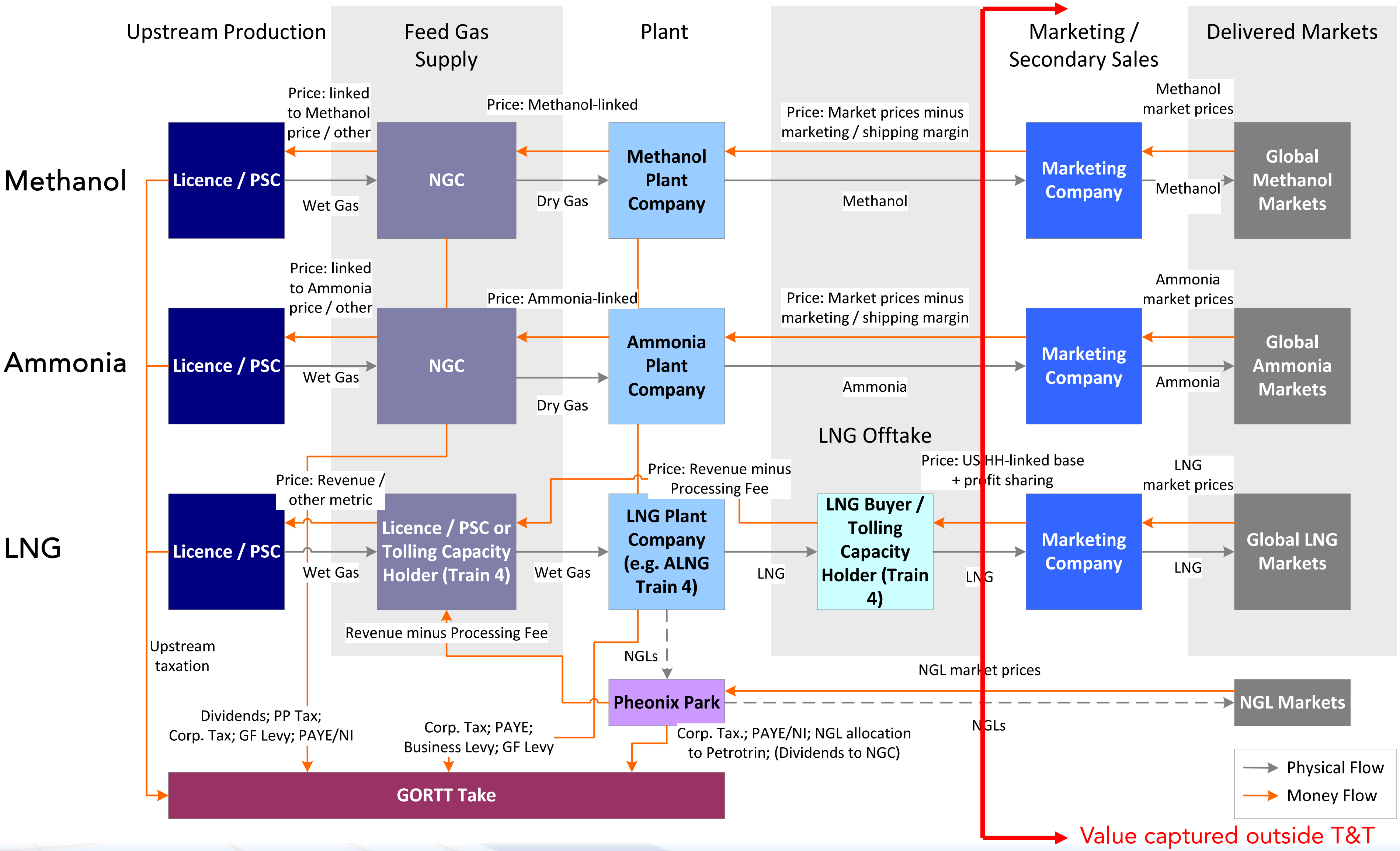
Downstream

- D/S Co. profit tax
- Govt Co. profits/dividends
- Payroll tax

NGC (& PPGPL) has provided additional economic rent to the GORTT from midstream

FLOW OF MONEY

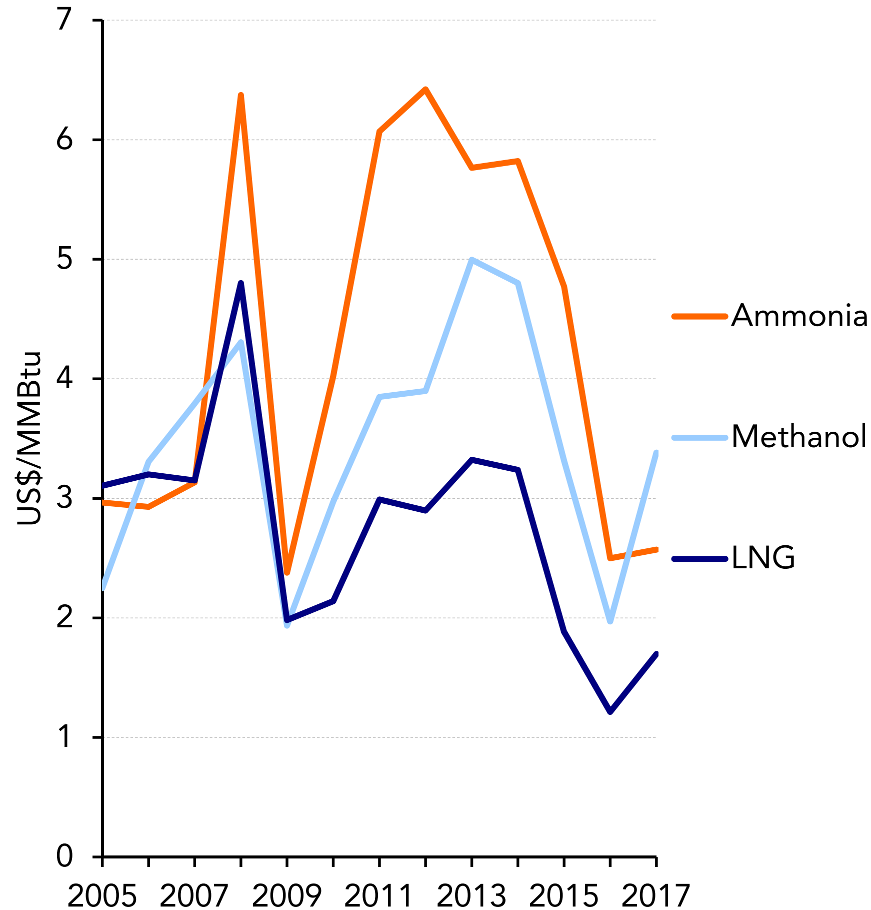
Value generation along the gas chain



LNG has consistently lagged Ammonia & Methanol in netback gas pricing since 2009

- Many of ALNG's contracts have not worked in T&T's favour
  - Much of ALNG's production has base pricing tied to US gas prices
  - This hurt T&T badly as the shale gas revolution supressed US gas prices
  - Hence, LNG netbacks did not benefit greatly from higher global commodity prices, unlike Ammonia and Methanol
- T&T did not significantly benefit from very high global LNG prices
  - Significant volume of T&T cargoes sold into markets in the $10-15/MMBtu range, particularly in 2013/14

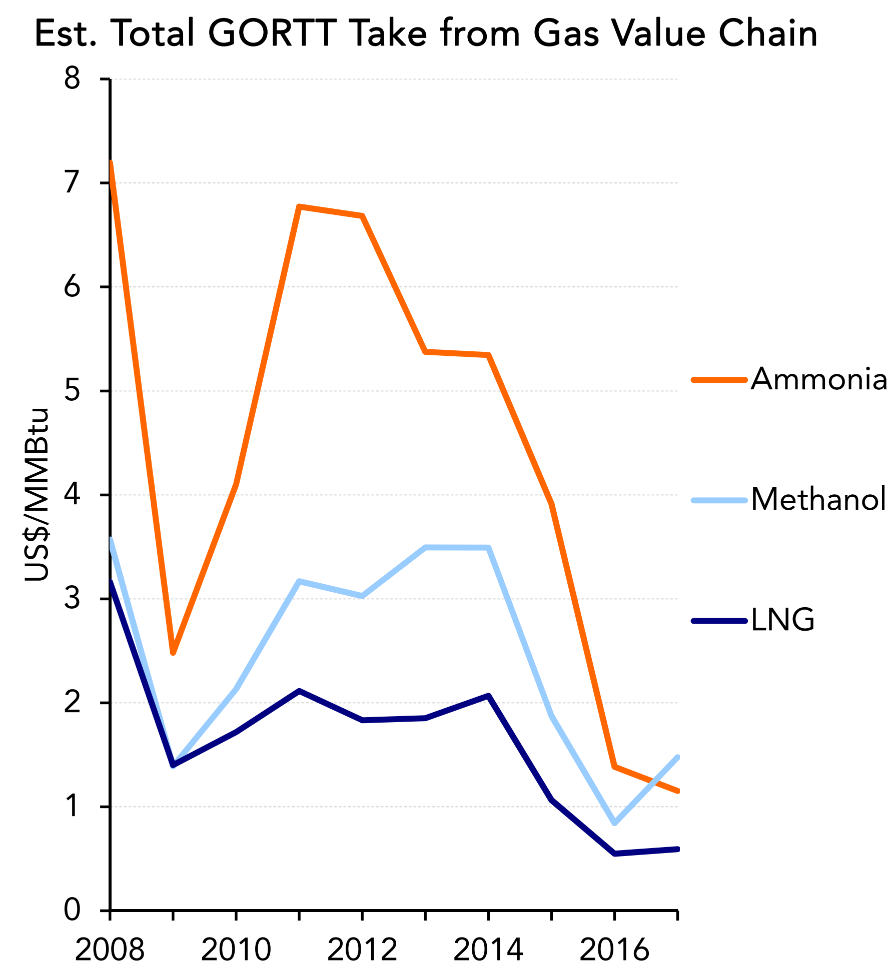
Estimated Netback Pricing to Plant Inlet*



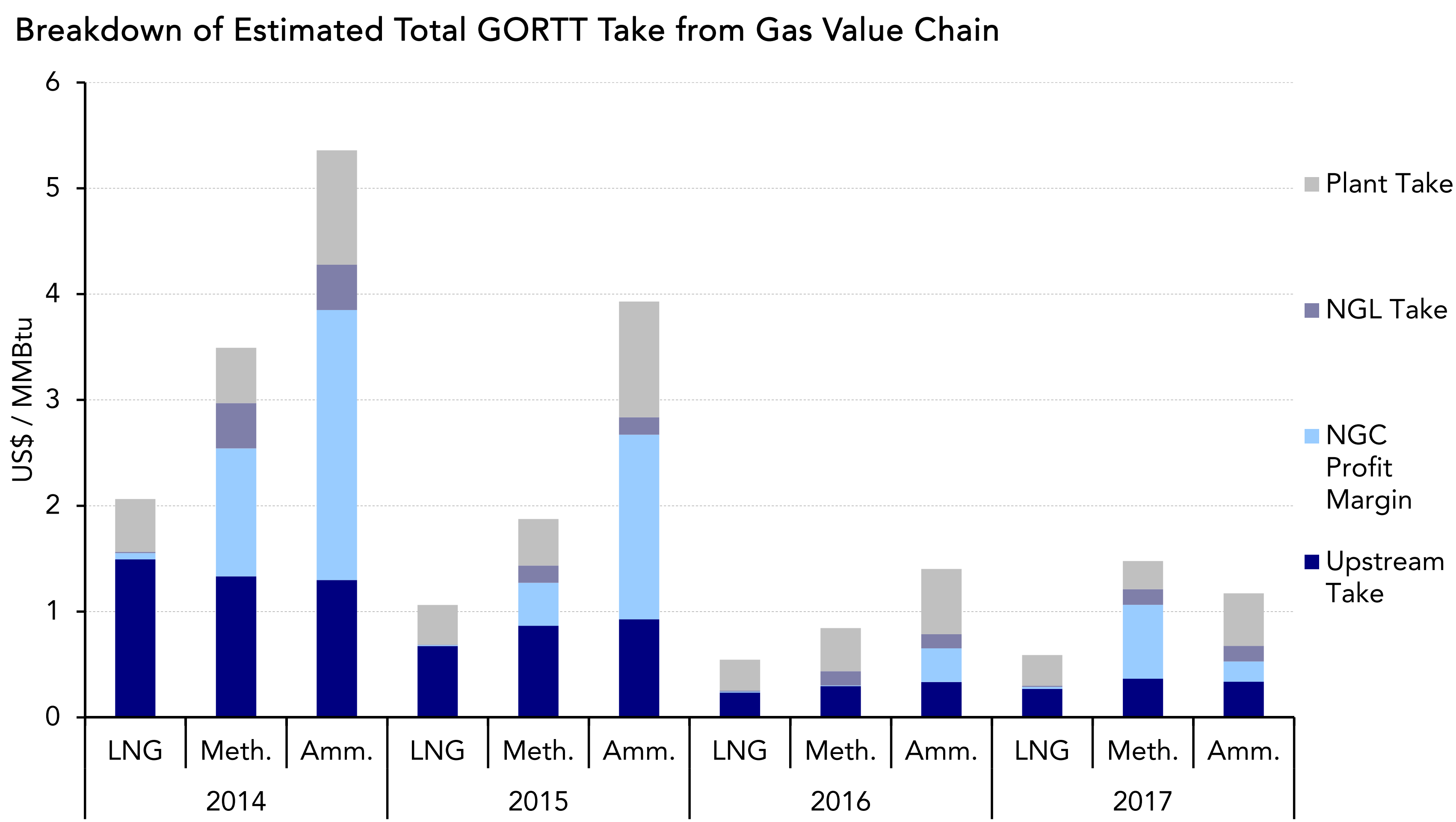
*Note: ALNG figures subtract a calculated "NGL credit" to compare on the same basis to dry gas sales by NGC

Ammonia has provided the greatest value for T&T

- Ammonia has provided the highest GORTT take every year from 2008, until 2017
- LNG consumes >50% of T&T's production but has provided significantly lower value
- Methanol trended between Ammonia and LNG from 2010 to 2016, before moving above ammonia in 2017

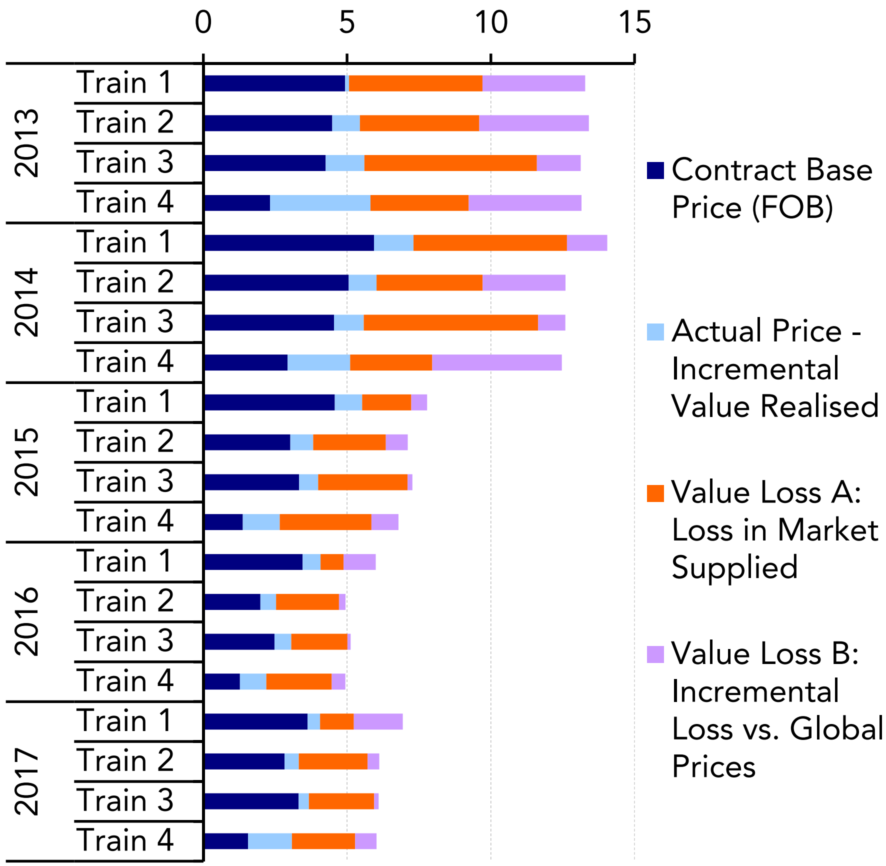


NGC profit margin has been key to higher GORTT take from Ammonia / Methanol

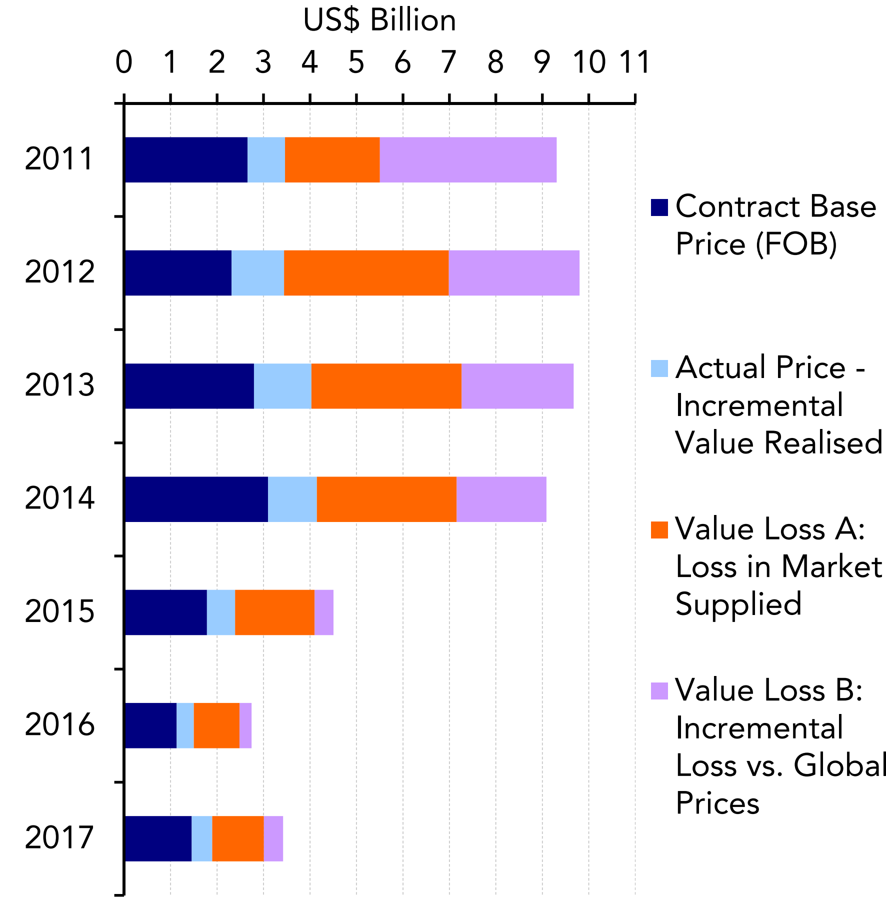


Significant value in the LNG chain has not been realised in T&T

LNG Prices Realised & Est. Value Loss per Train*



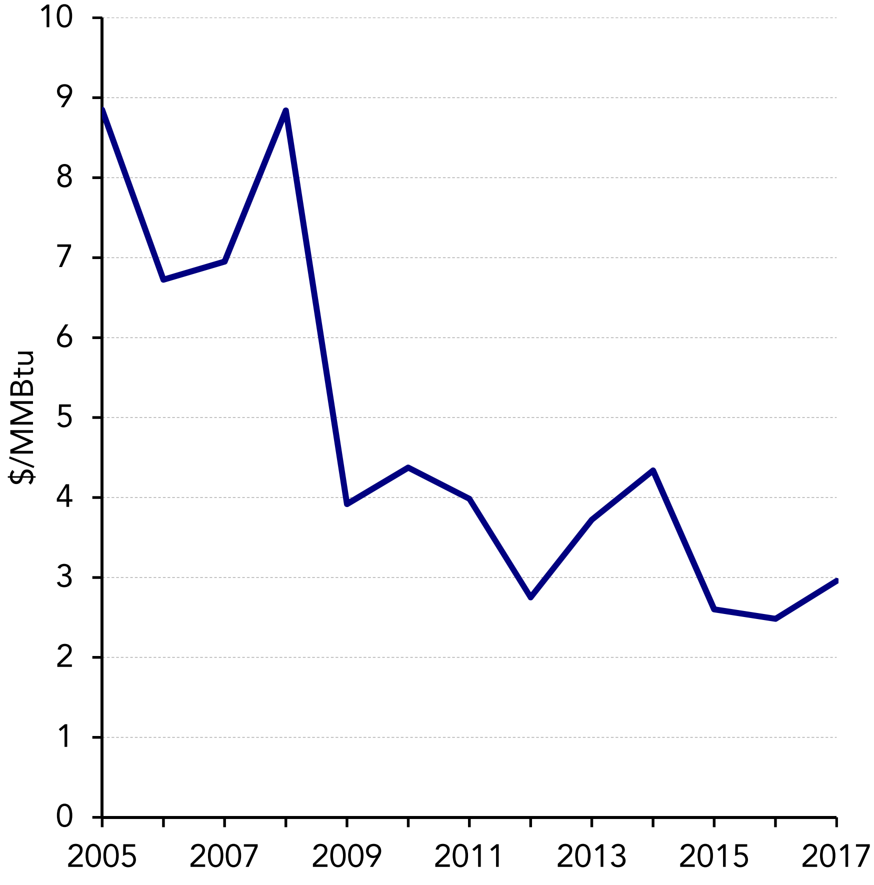
LNG Revenues Realised & Est. Value Loss – Totals



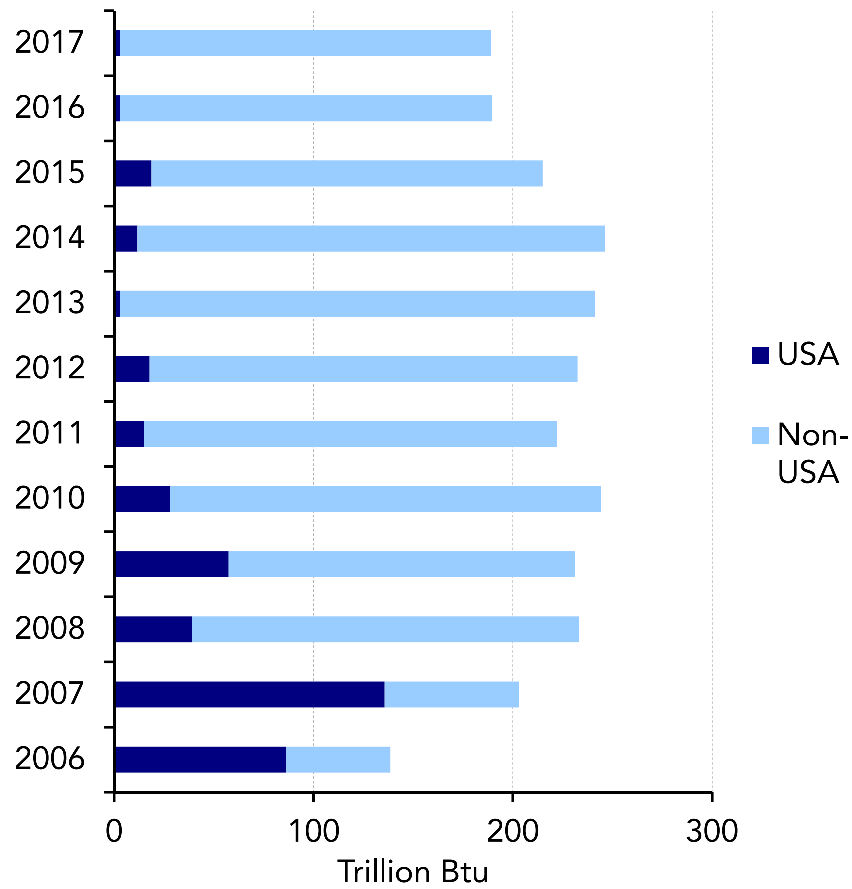
* Value Loss A: Difference between the price realized from the market actually supplied and Poten's estimate of the prevailing price in that market
Value Loss B: Poten's estimate of the incremental price that could have potentially been realized by selling FOB at an oil-linked price (11.5 – 12%)

Major issue is that the US has not been a relevant reference LNG market for many years

US Henry Hub Gas Prices



ALNG Train 4 Export Destinations

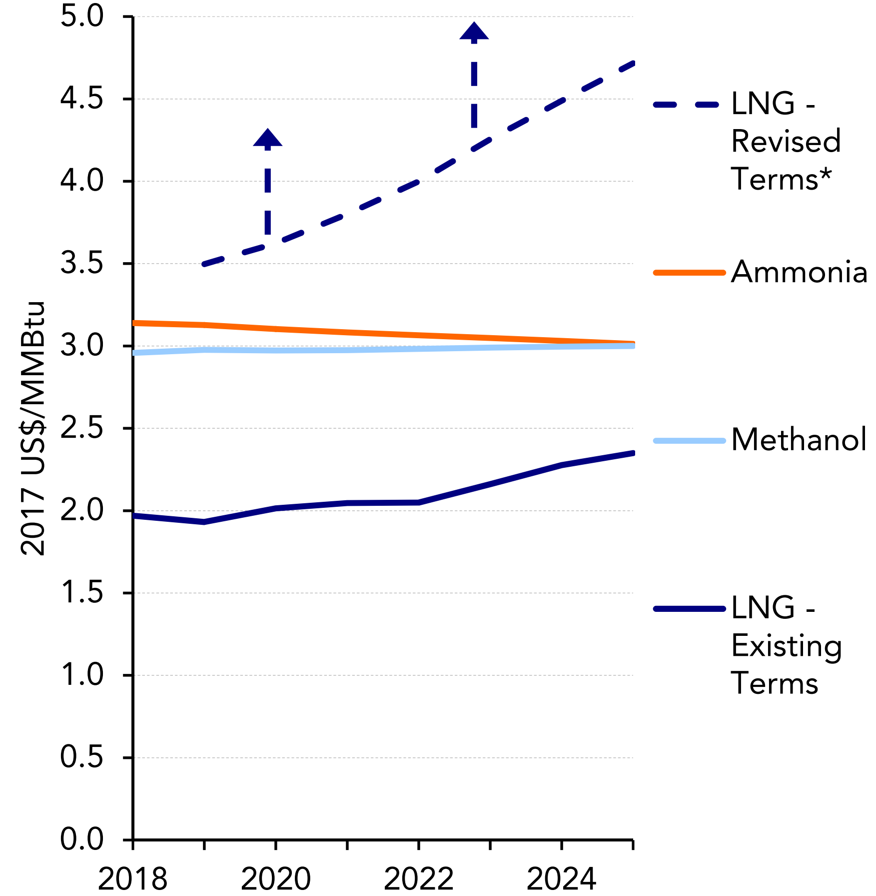


LNG could provide the highest netback gas prices under revised terms when contracts expire

- Assumptions:
  - LNG could capture a base price of UK NBP minus freight for future sales
    - Should be able to achieve a higher price than this as buyers will pay for flexibility
  - Fixed margin of $1/MMBtu for liquefaction, with the remainder flowing back to the plant inlet
  - Ammonia / Methanol will continue on current commercial arrangements

- Important for the GORTT to realise a market price

Est. Forecast Netback Pricing to Plant Inlet



Summary

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Summary

- LNG has consistently lagged Ammonia & Methanol in netback gas pricing since 2009
- Ammonia: highest GORTT take, with LNG lagging Methanol
- NGC profit margin has been key to higher GORTT take from Ammonia / Methanol
- Long-term contracts are a feature of the LNG business, but many of ALNG's are tied to the US market, which has hurt T&T badly as US prices declined
- As a result, much of the value from higher global LNG markets has has not been realised in T&T
- No return to the very high commodity prices of 2011-14 foreseen
- But, LNG could still provide the highest netback gas prices under revised terms when contracts expire

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