

IHS ENERGY

An IHS Presentation for -

The International Gas Union

Council Meeting, Cartagena, Colombia

Global Gas Markets – Growth and Challenges

ihf.com

22 October 2015, Cartagena

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Key messages

- The global gas market is encountering numerous challenges in an overall growth context. Whether the current weakness is cyclical (the IHS view) or structural remains to be seen.
- LNG developers are in a competitive game of ‘musical chairs’
 - Lower oil prices make project development more challenging
 - US Lower-48 projects remain commercially competitive and most easily executable
- Producers need new business models and applications in order to monetize growing global gas reserve inventories
- Contract and trading structures are evolving

Supply and demand drivers for LNG are moving in opposite directions

One year ago, we saw supply exceeding demand. This tension is increasing

LNG DEMAND



China manufacturing hard landing
Korean reset
Low coal prices
Oil substitution driver less strong

US LNG moving ahead, including greenfields
Canadian, East African, Australian developers still talking up their projects
Iran/Egypt possible low cost additions around 2025?
Potential small scale and floating fast-track under the radar



LNG SUPPLY

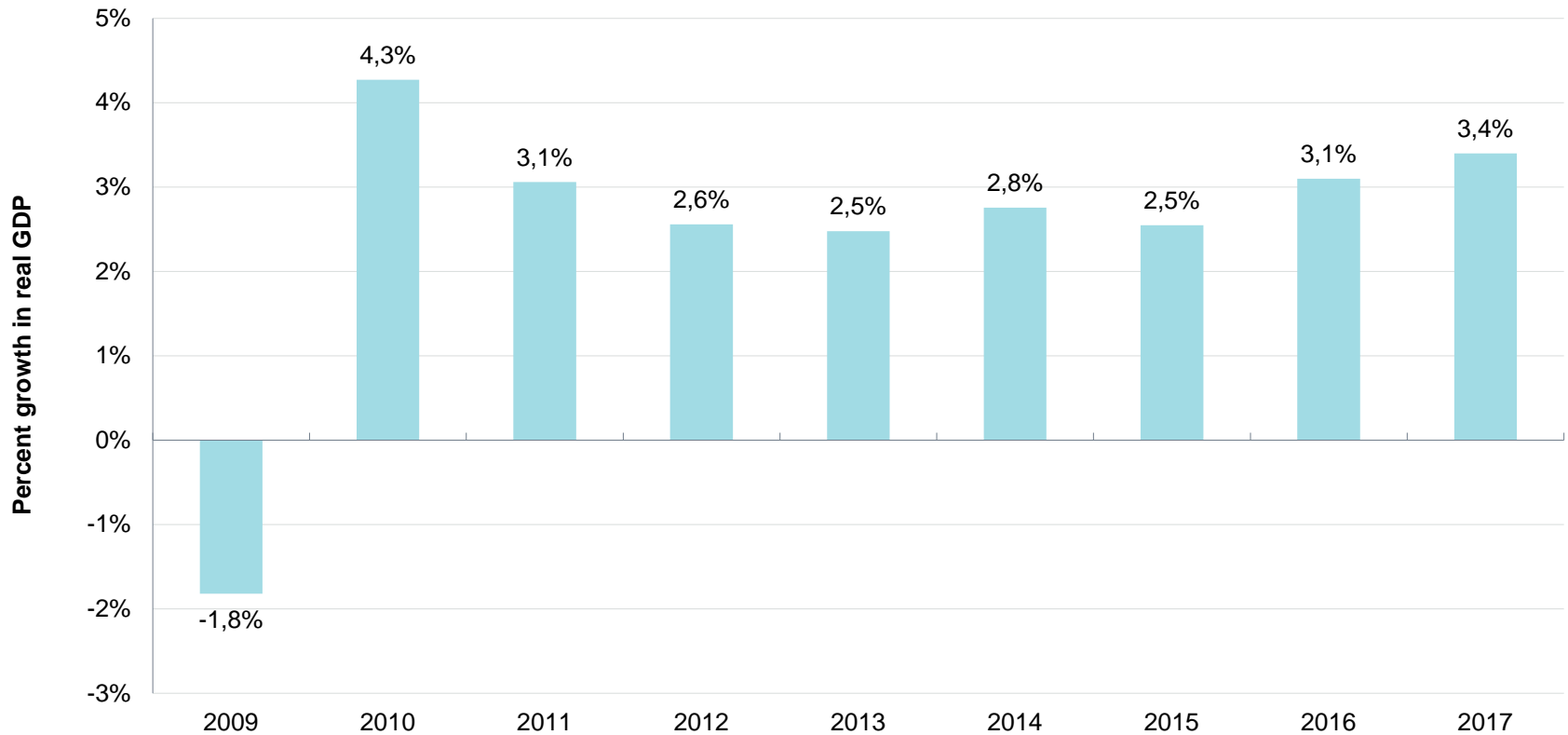
Source: IHS

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Macro – The Economy, Oil, and COP-21

World economic growth outlook—not bad but...

World real GDP growth rates, 2009–17



Notes: Global GDP growth calculated using real local currency growth rates, aggregated using real exchange rate-based weights.

Source: IHS

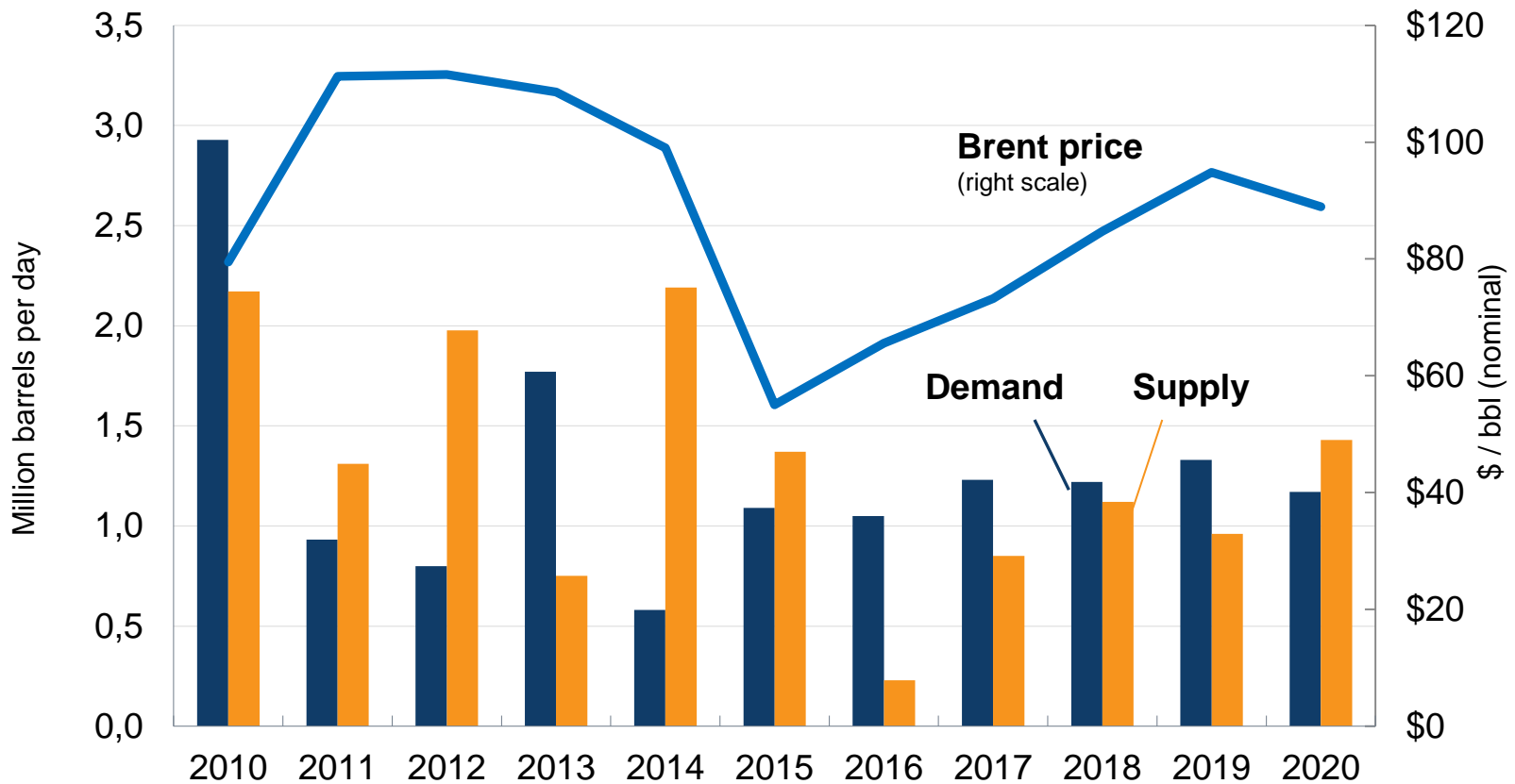
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Key messages for the global crude oil market: Q3/4 will be stress point for oversupplied market

- **Low prices are imperiling high cost non-OPEC supply**, but impact will be slow.
- **There is little pressure – yet - for Saudi Arabia and its Gulf allies to change their market share production policy**, particularly given the possible Iran deal. However, **chatter of a reversal in OPEC strategy could support prices temporarily.**
- **If WTI stays below the \$45/bbl level, as we expect, then US production will slow sharply in the next few months**, but news-driven price rallies in paper markets could delay the balancing of the markets beyond mid-2016.
- **China's economic and stock market stumbles have taken bullishness out of some demand forecasts.** IHS has consistently held that Chinese demand will slow in the second half of 2015 but will still account for significant growth.
 - about 413,000 b/d of demand growth in 2015, 287,000 b/d in 2016.

Annual global demand growth improves but supply overhang remains through 2016

Change from previous year in world oil supply and demand

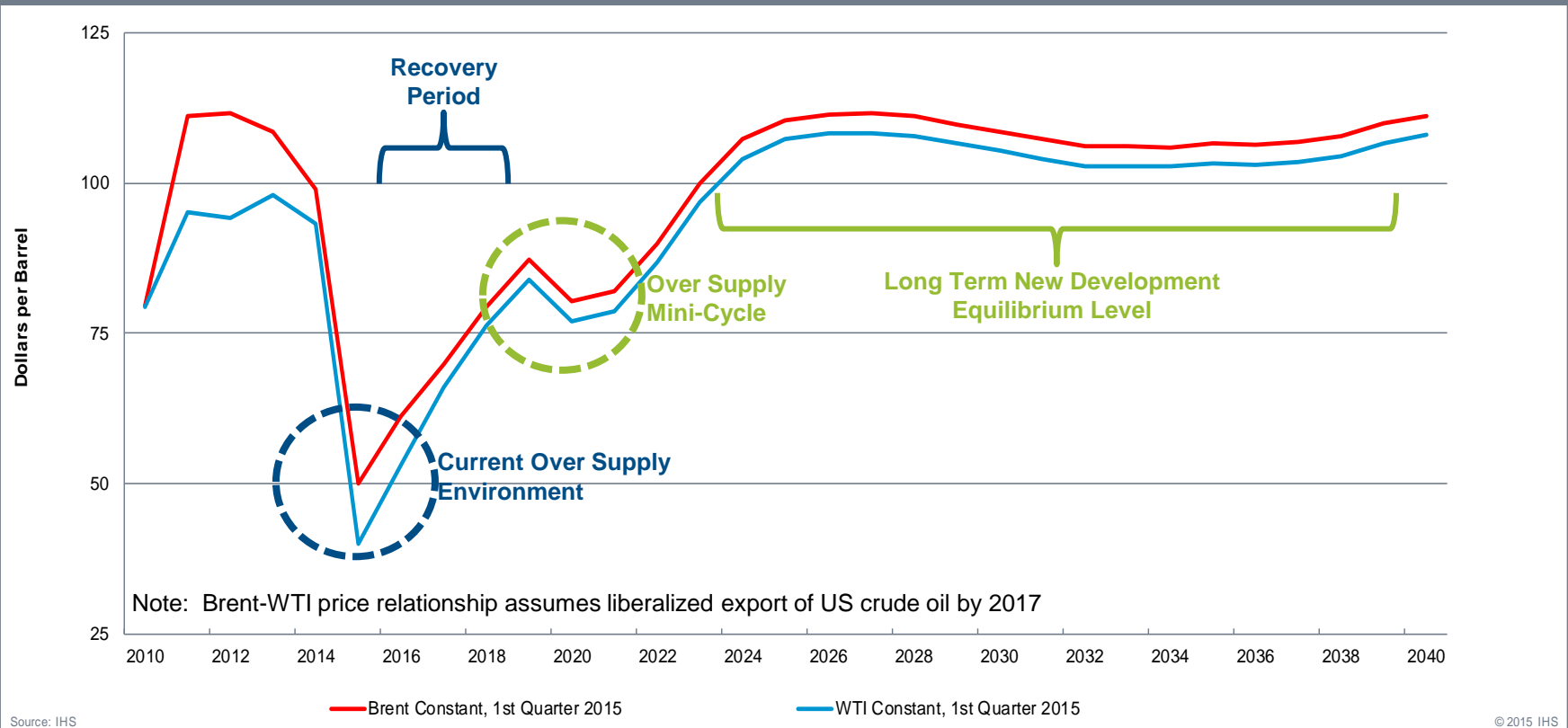


Notes: Annual changes are changes from the previous year. Liquids demand includes LPG and biofuels. Liquids supply includes natural gas liquids and biofuels.

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Long term real oil prices reverts to \$100/bbl+ by next decade, supporting marginal supply

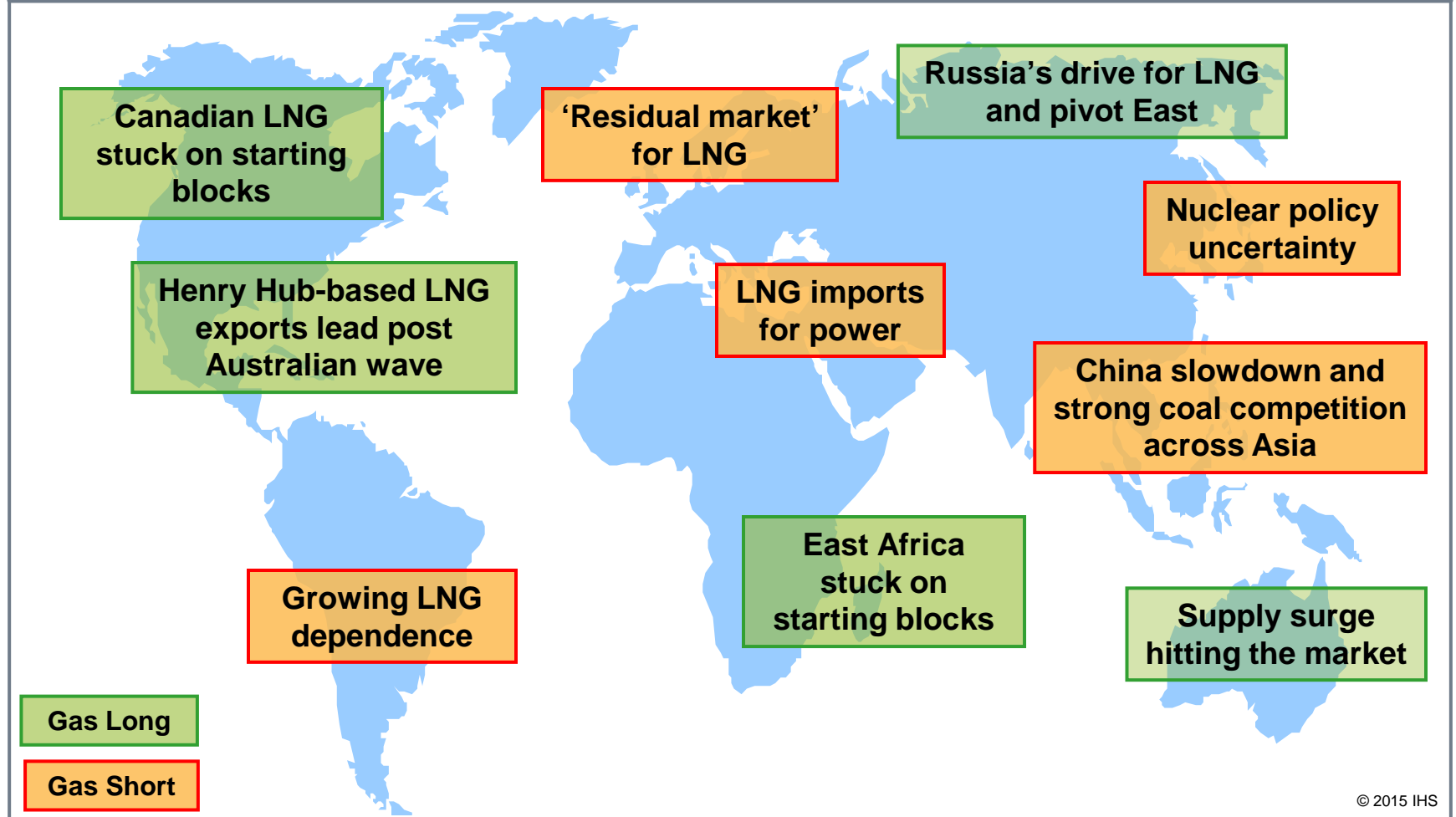
IHS Brent & WTI Long Term Price Price Tracks (Constant Dollar)



LNG Market Trends

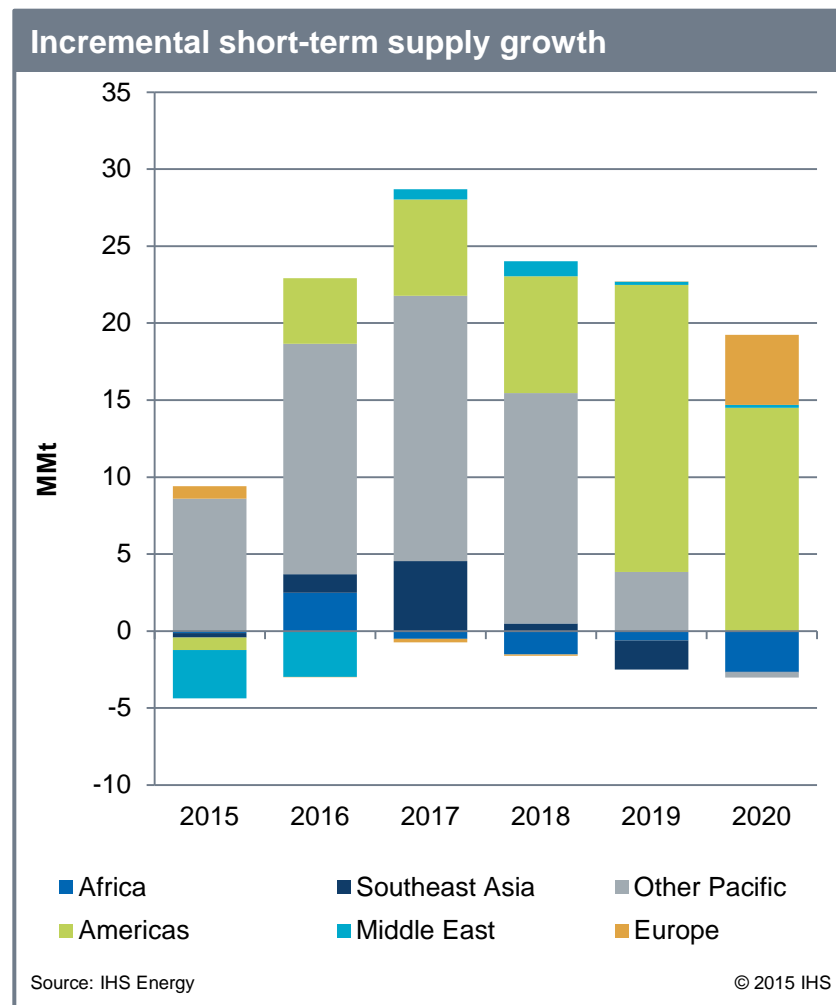
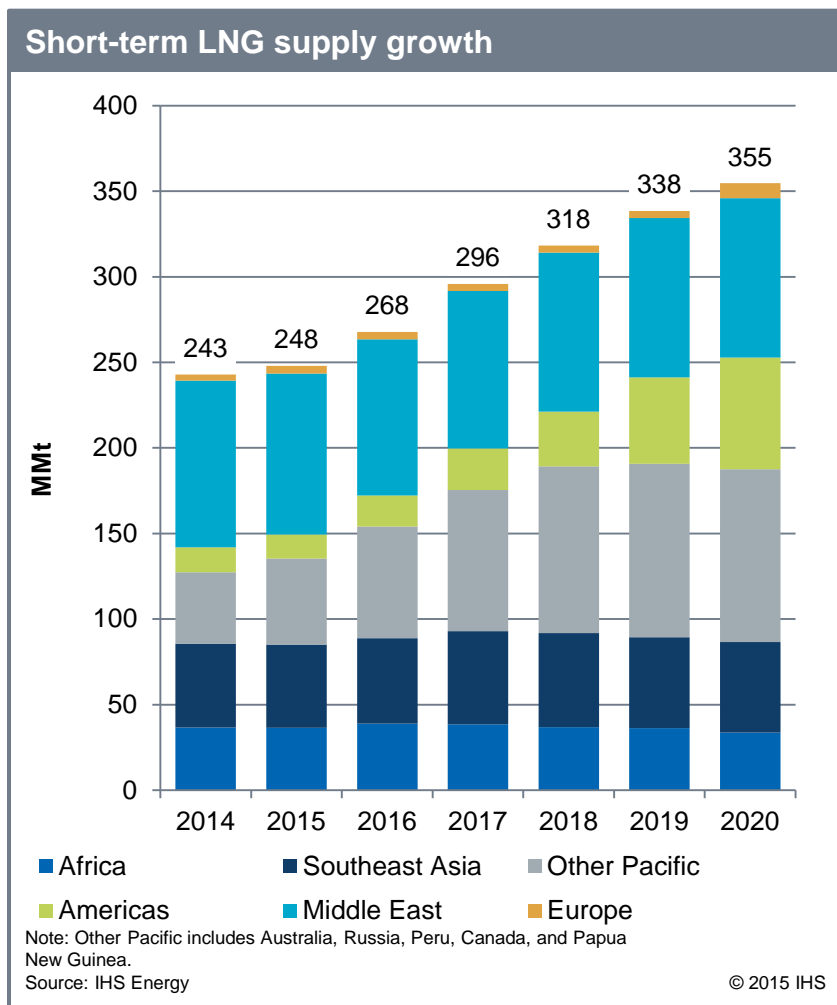
Global gas snapshot, October 2015

Key regional trends shaping the LNG market

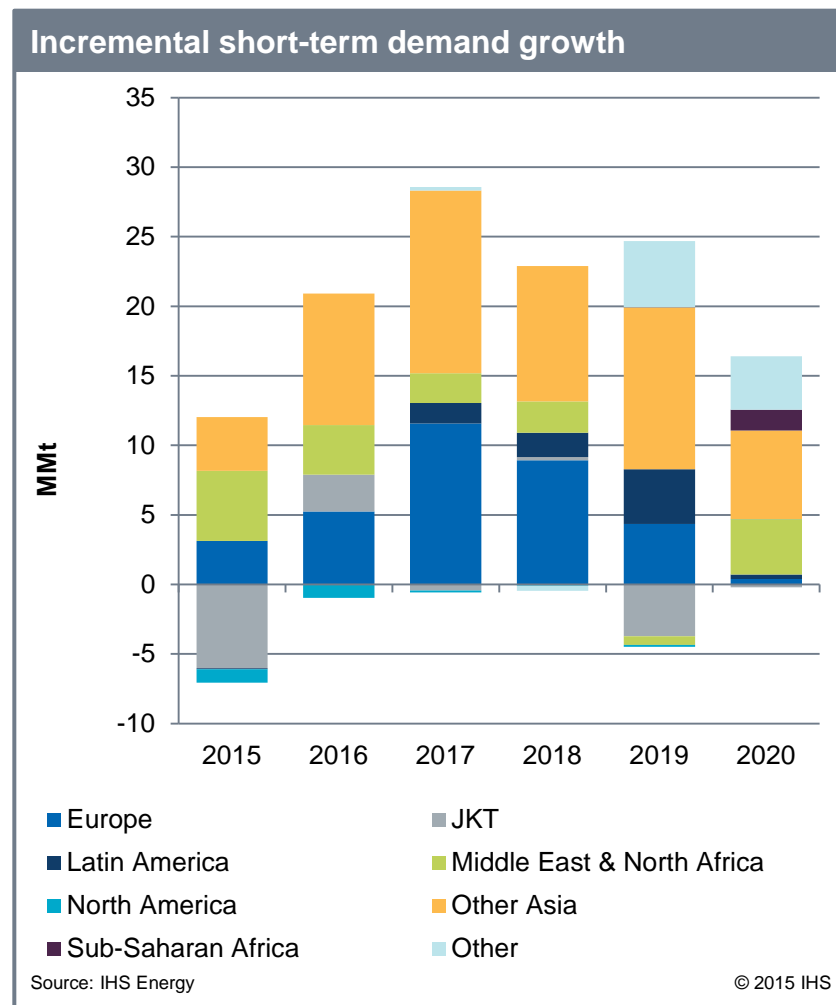
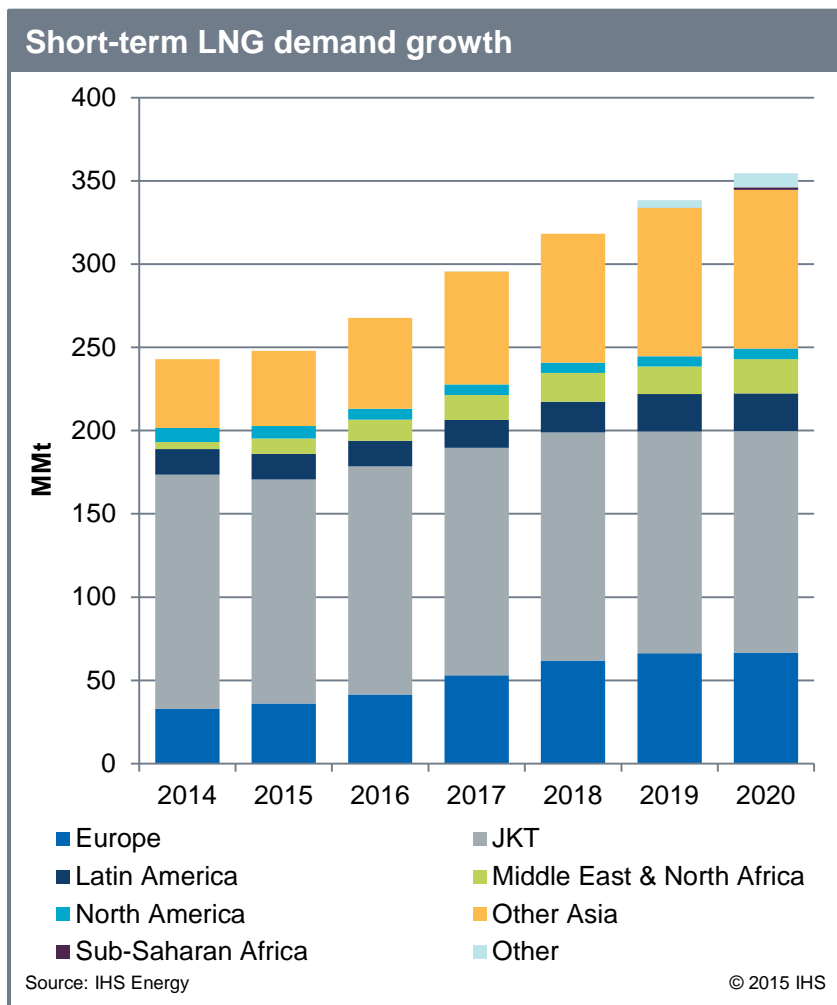


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Short-term LNG supply growth

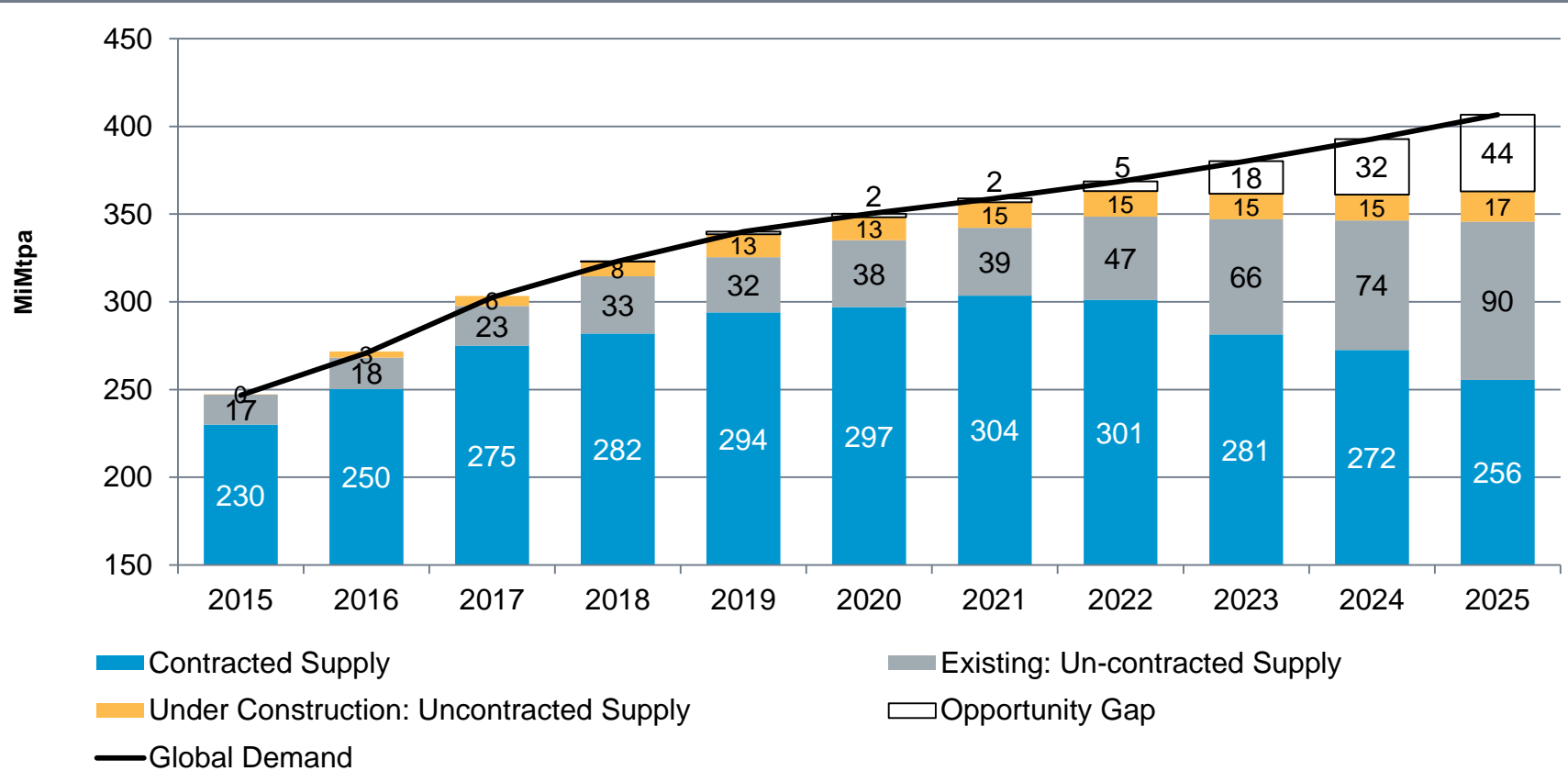


Short-term LNG demand growth



Market opportunity gap: can new projects compete with existing contract extensions?

Contracted supply and viable un-contracted supply vs. global LNG demand

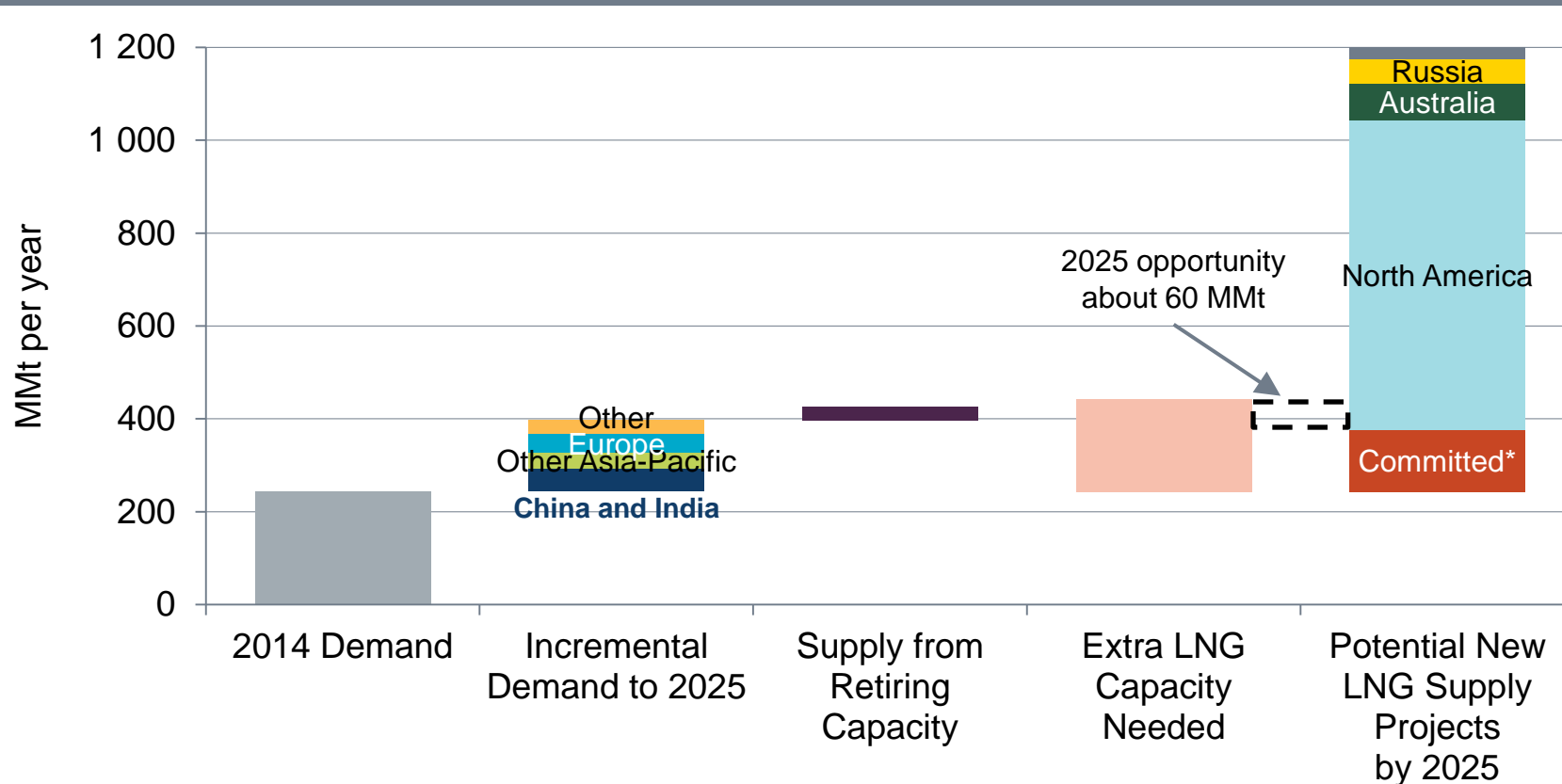


Source: IHS Energy, Sept 2015

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Room for only one in 15 projects

IHS LNG supply and demand outlook to 2025

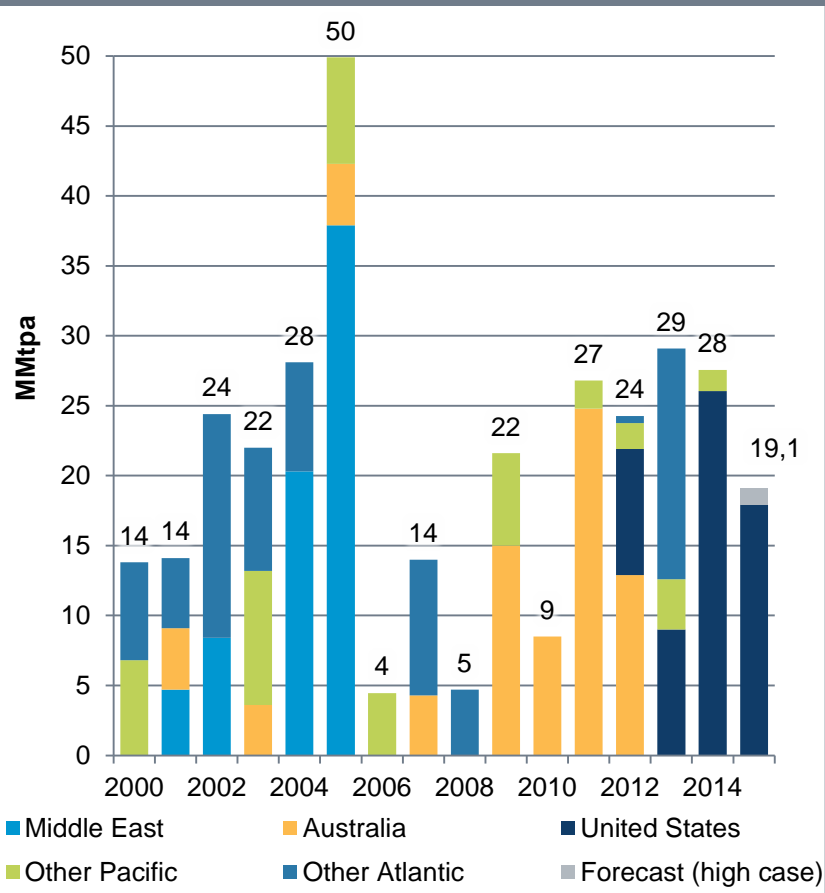


Notes: Including projects sanctioned in 2014
 Source: IHS Energy

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Future supply additions most likely to come from US and floating projects

Sanctioned LNG capacity



Source: IHS Energy

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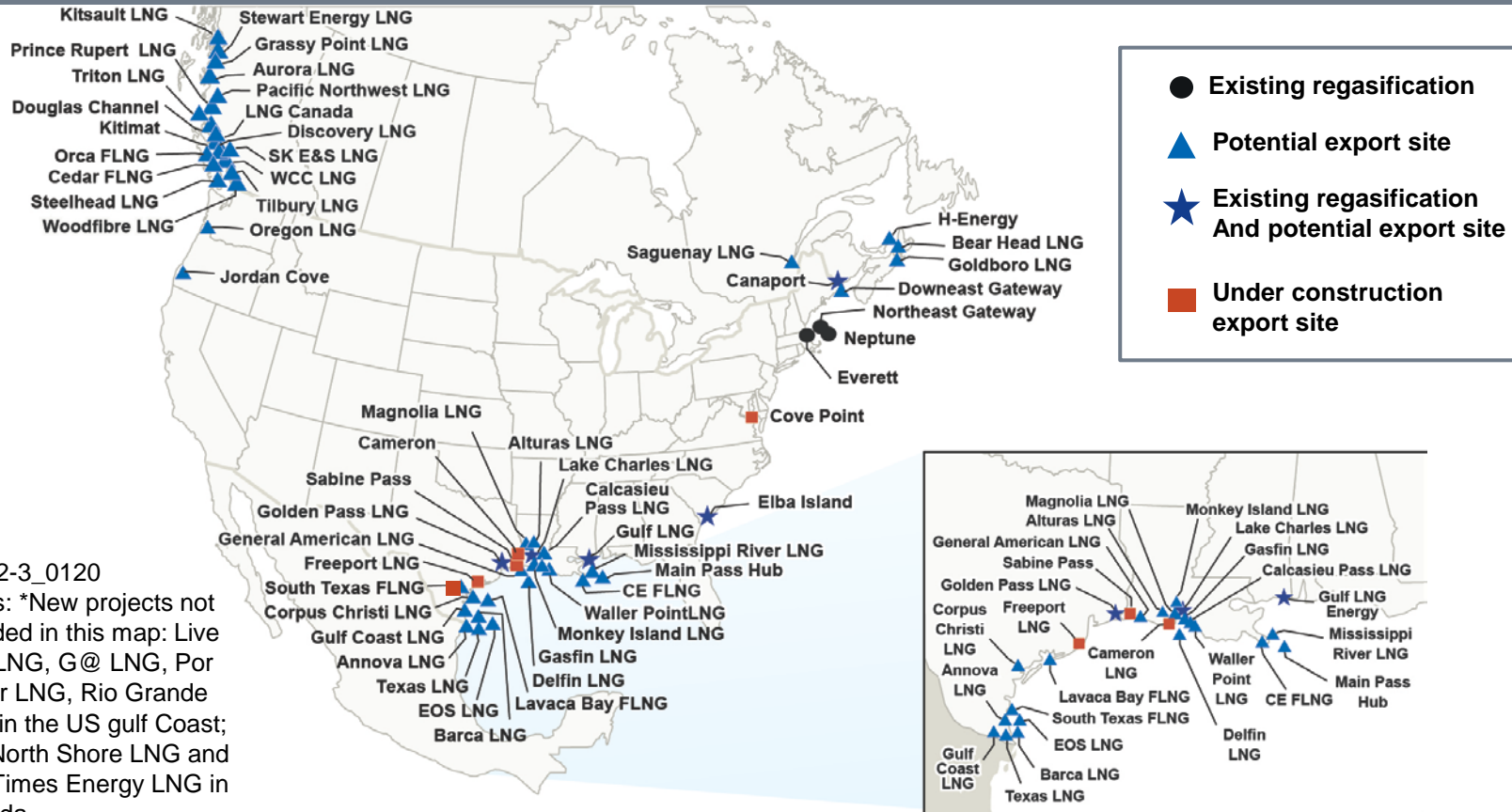
Achieved and projected FIDs, 2015-2017

	Project	Capacity (MMtpa)	Country	Year
Achieved	Freeport LNG T3	4.4	United States	April 2015
	Corpus Christi LNG T1-2	9.0	United States	May 2015
	Sabine Pass LNG T5	4.5	United States	July 2015
Conditional	Cameroon FLNG	1.2	Cameroon	2015
	Pacific NW LNG T1-2	12.0	Canada	June 2015*
Projected	Elba Island	2.5	United States	2016
	Douglas Channel FLNG	0.6	Canada	2017
Border-line	Mozambique (Area 1) T1-2	12.0	Mozambique	2017-18
Wildcard	Fortuna FLNG	2.2	Equatorial Guinea	---
	Coral FLNG	2.5	Mozambique	---
	Magnolia LNG T1	2.0	United States	---
	Jordan Cove T1-4	6.0	United States	---

Note: PETRONAS reached a conditional FID on Pacific Northwest LNG in June 2015, but still needs to reach a final FID.

North America: The largest source of new LNG supply?

Regasification facilities and potential liquefaction projects in US Lower 48 and Canada*



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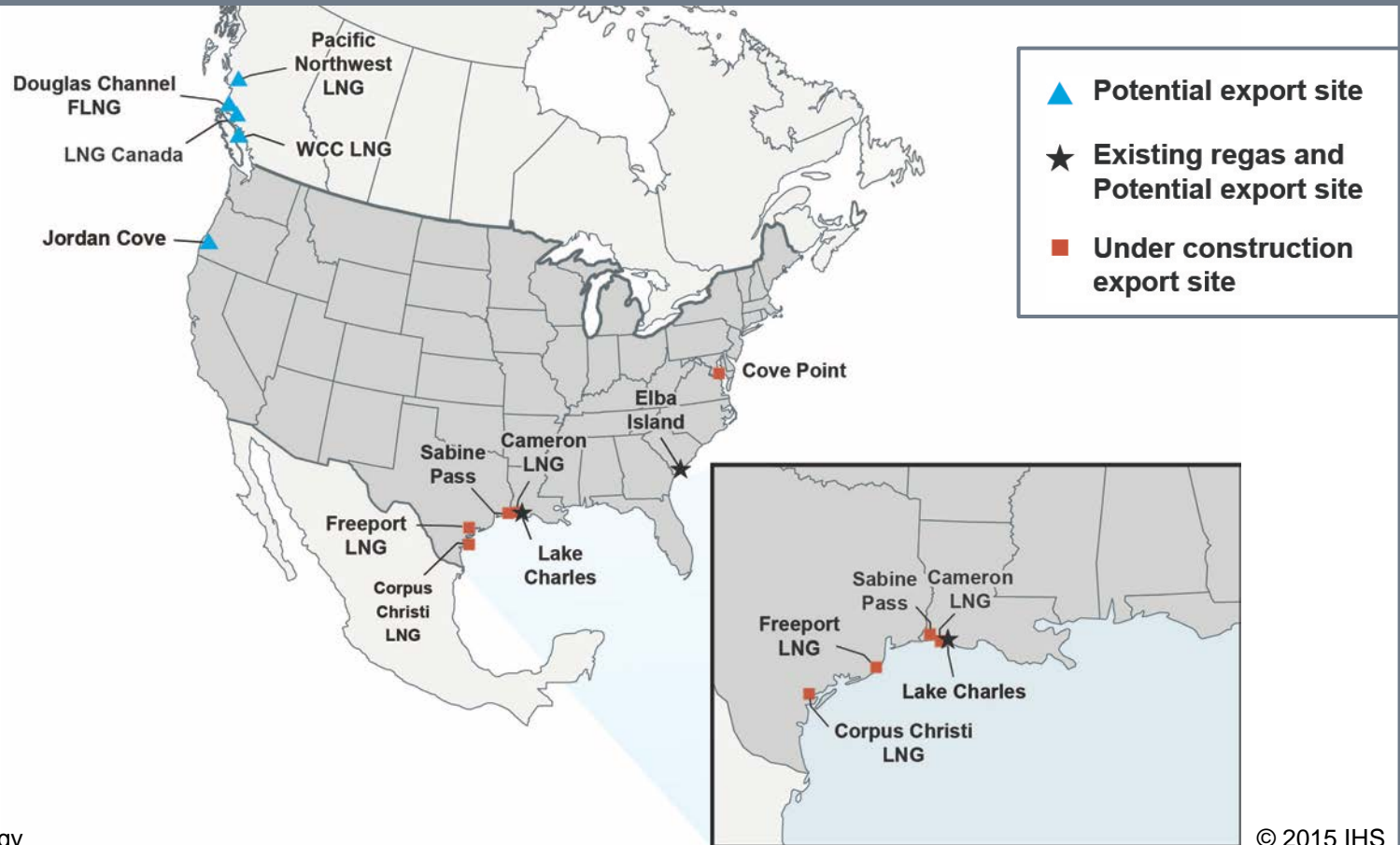
Notes: *New projects not included in this map: Live Oak LNG, G@ LNG, Por Arthur LNG, Rio Grande LNG in the US gulf Coast; and North Shore LNG and NewTimes Energy LNG in Canada

Source: IHS Energy

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North American LNG projects actually expected to move to completion

North American regasification facilities and advanced liquefaction projects

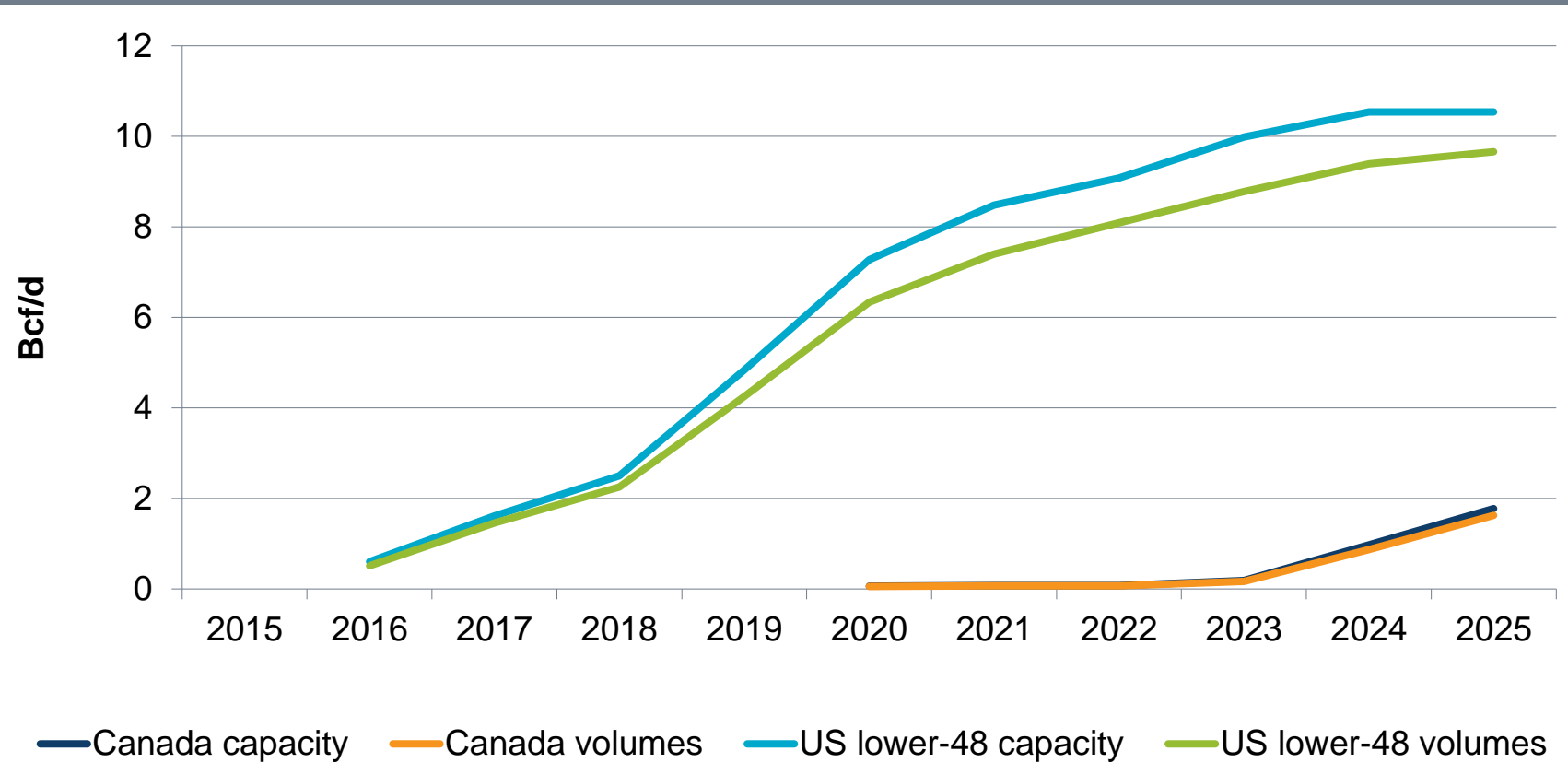


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 Source: IHS Energy

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North American LNG exports in the current outlook

US lower 48 and Canada liquefaction capacity and exports



Source: IHS Energy

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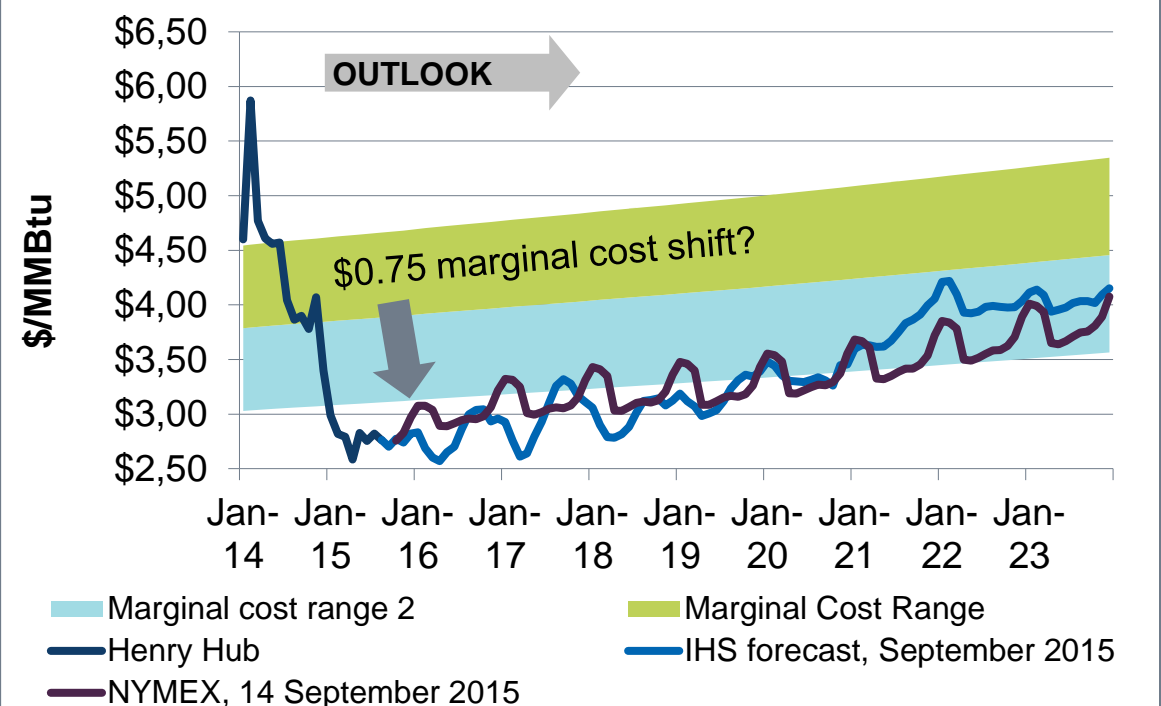
The gas price is defined by the tension between rapid demand growth, and the strong resource base. Demand growth supports higher natural gas prices, but still under \$4 per MMBtu until late 2021

Real averages	
2010–15:	\$ 3.77
2015–20	\$ 2.94
2021–30:	\$ 3.63
2031–40:	\$ 4.21

Source: IHS

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September 2015 Henry Hub history and forecast



Notes: MMBtu = million Btu.
Source: IHS, CME, Intelligence Press

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