

Congreso Gas y Energía 2010

Cámara Boliviana de Hidrocarburos

August 18th • Santa Cruz, Bolivia



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Global Gas/LNG Status Mid 2010

- **Short-term Surplus—The “Triple Whammy”**
 - Recession easing, but demand is not back to pre-recession levels
 - North American Unconventional surge continues
 - LNG supply surge also continues
 - ➔ Oil-linked contracts “Bend but don’t break”

- **Long-term Rebalancing—New Projects Will Require Contractual Support**
 - New LNG supply projects—at a price...
 - But how far does the unconventional revolution go?



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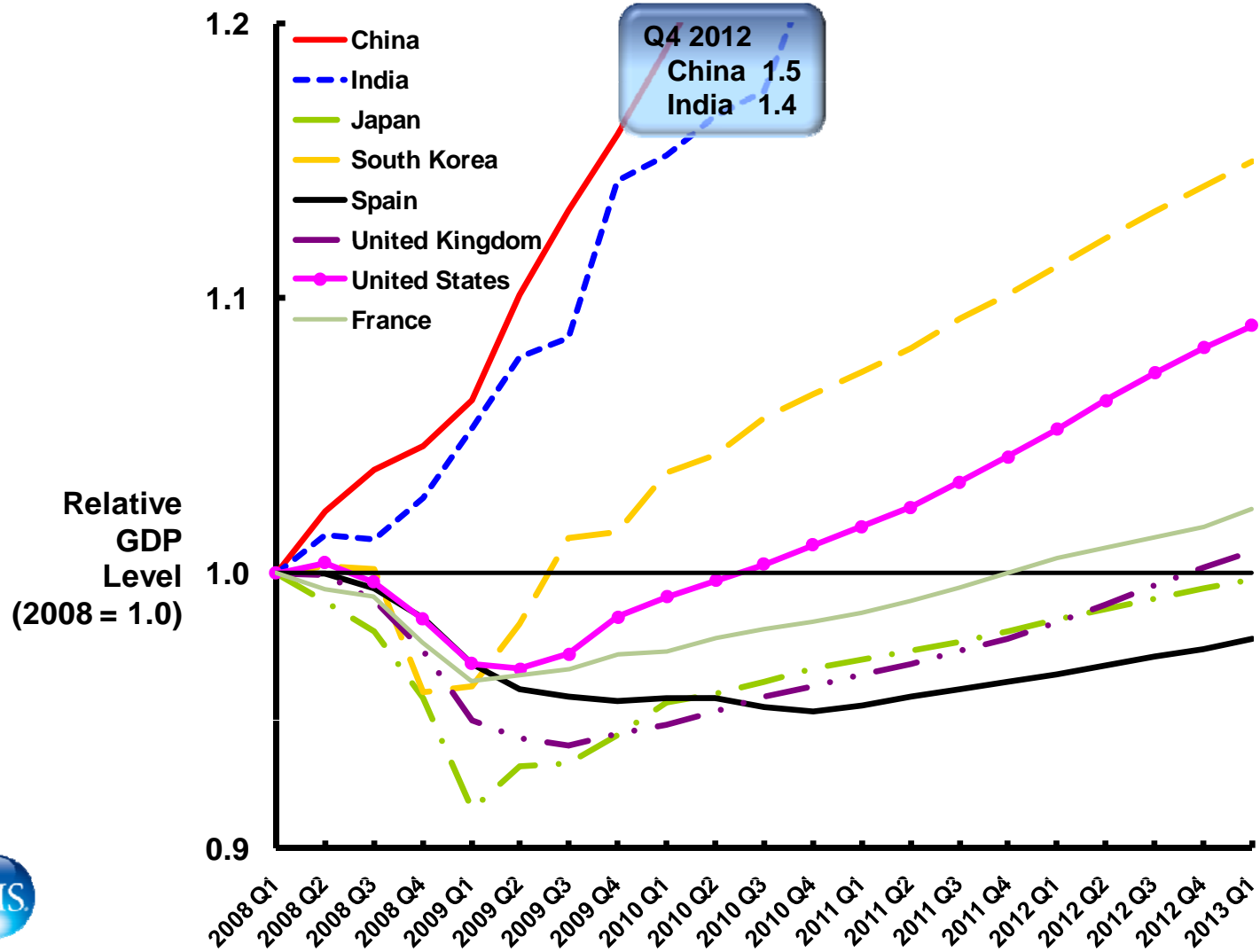
Source: IHS CERA.

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World Economic Growth: A Multispeed Recovery

Key LNG Markets



Q4 2012
China 1.5
India 1.4



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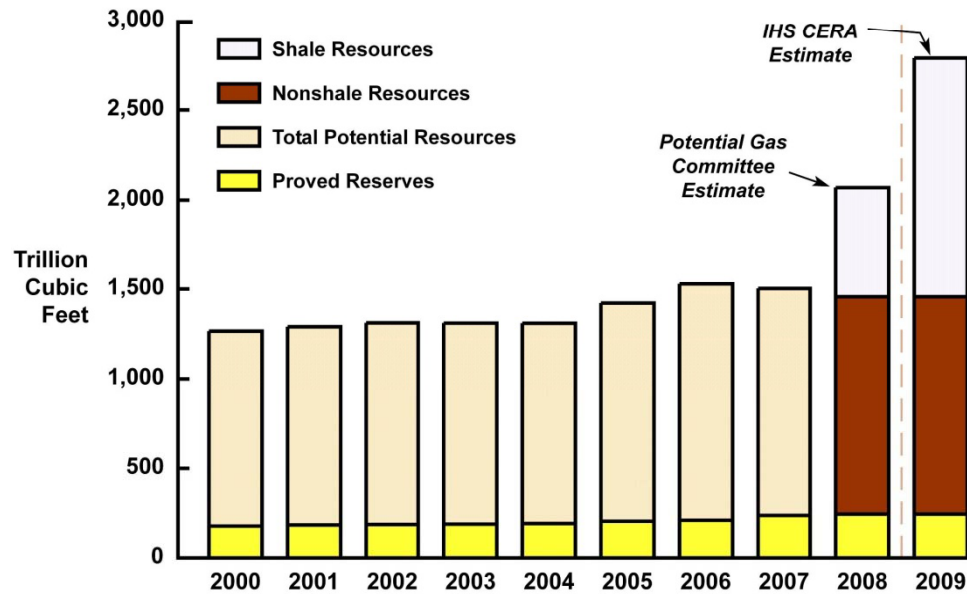
Source: IHS Global Insight, June 2010.

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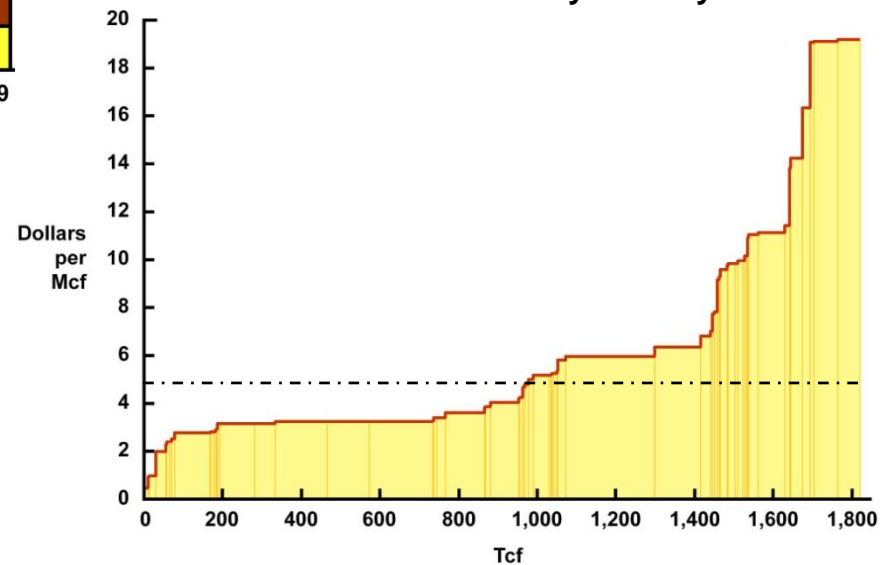
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Plentiful and Low-Cost North American Shale Gas Displaces Any Need for LNG

US Natural Gas Reserves and Resources



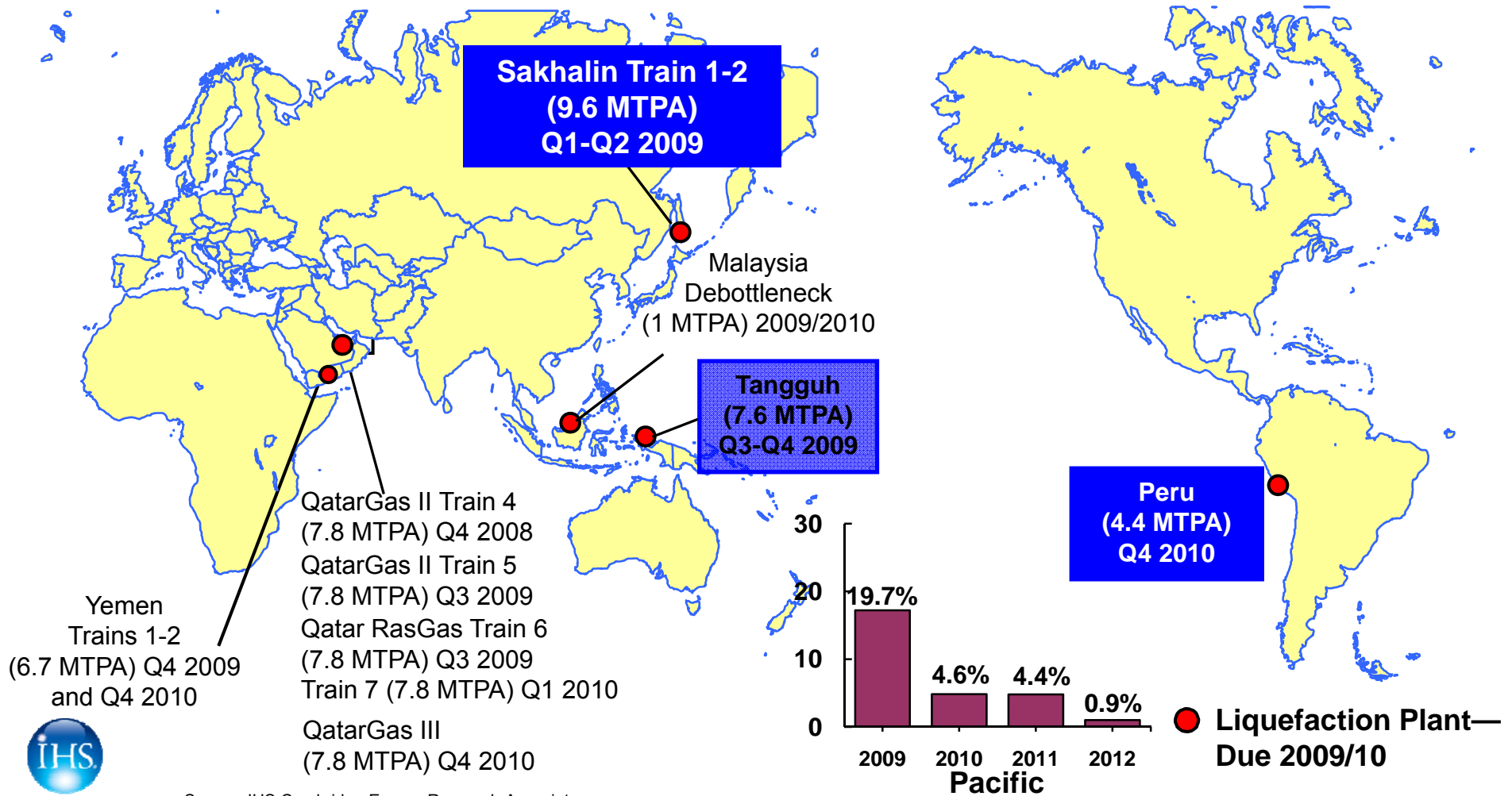
Breakeven Henry Hub Price for Natural Gas Resources in Analyzed Plays



Source: EIA, PGC, and IHS CERA.
00112-27

The LNG Capacity Surge (Liquefaction Capacity Additions 2009–10)

MTPA

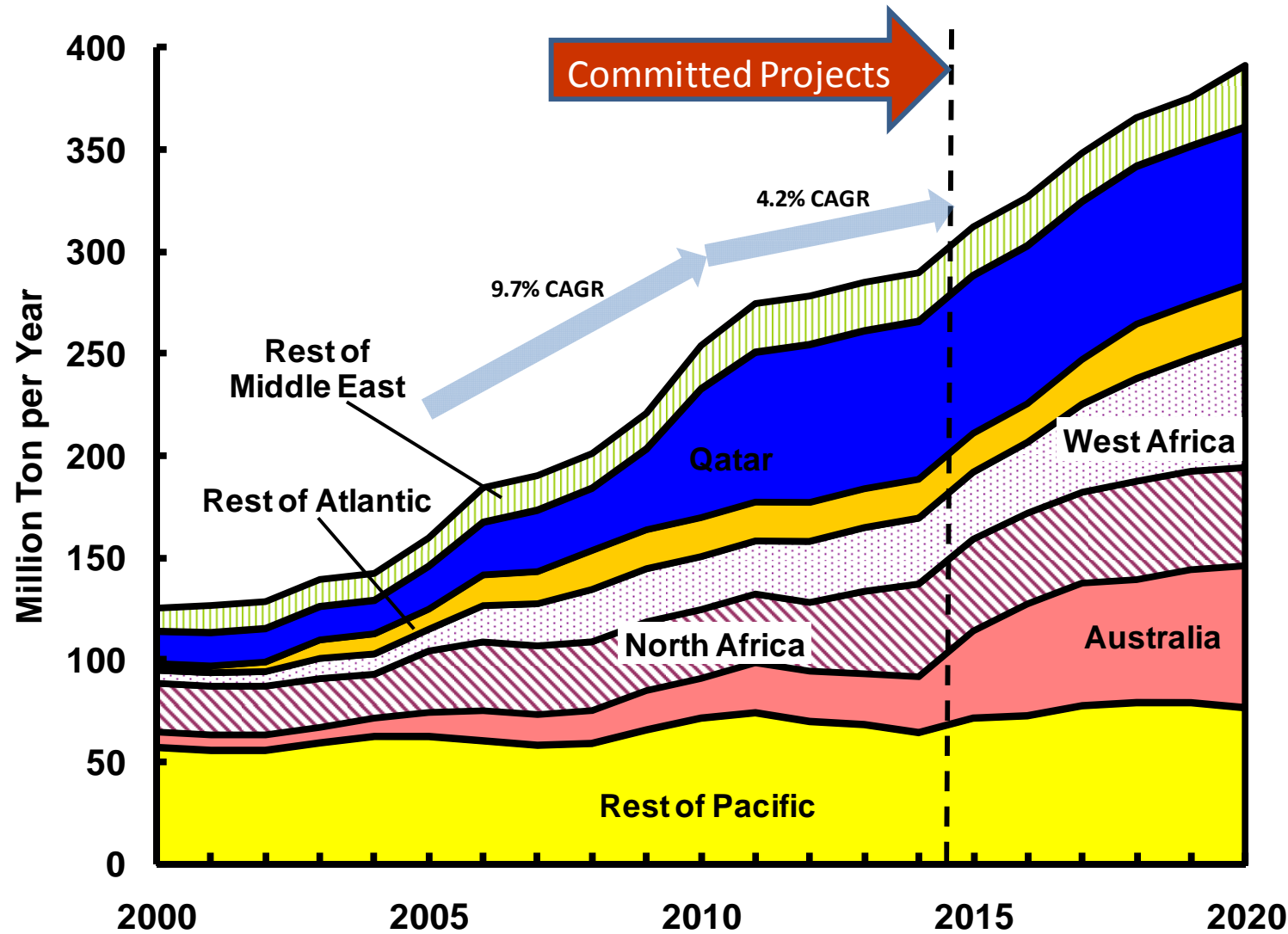


Source: IHS Cambridge Energy Research Associates.
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Global LNG Supply (Nameplate Capacity)



Source: IHS CERA.

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...What does It Mean for Latin
America?

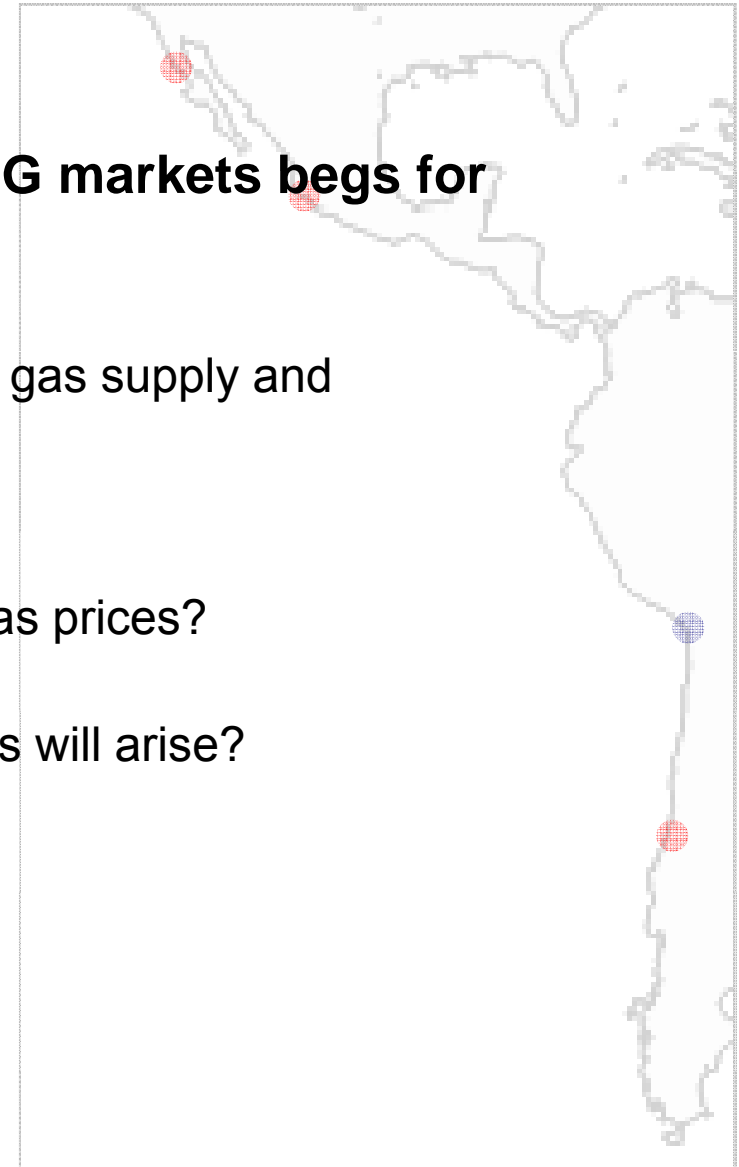


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...What does It Mean for Latin America?

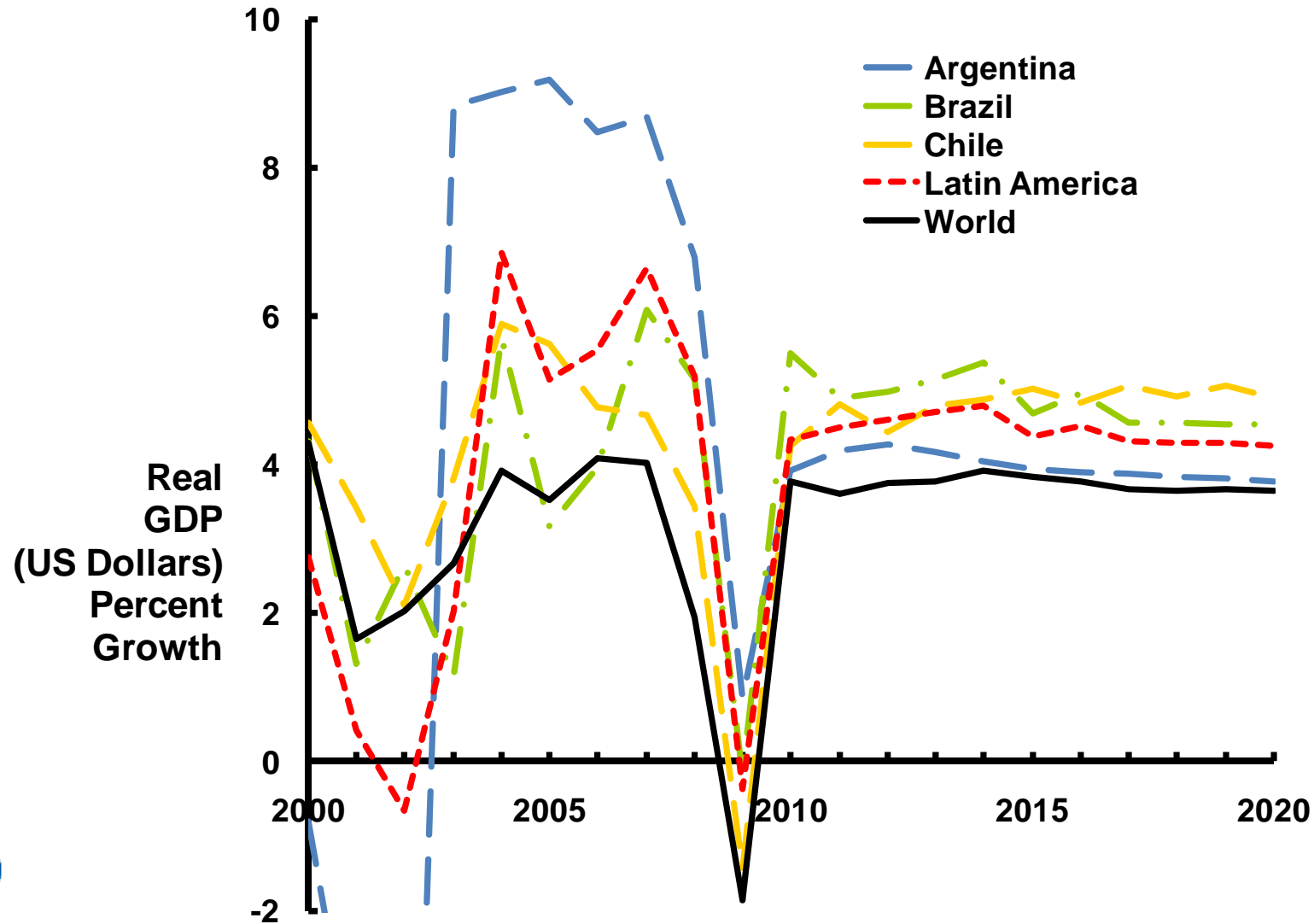
Latin America growing participation in LNG markets begs for the following questions....

- How will LNG impact Latin America's natural gas supply and demand balances —specifically in Chile, Argentina, Brazil, Peru, and Mexico?
- How will the LNG presence affect regional gas prices?
- What investments and arbitrage opportunities will arise?



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World Economic Growth: Recovery in Unison Latin America



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Source: IHS Global Insight, June 2010.

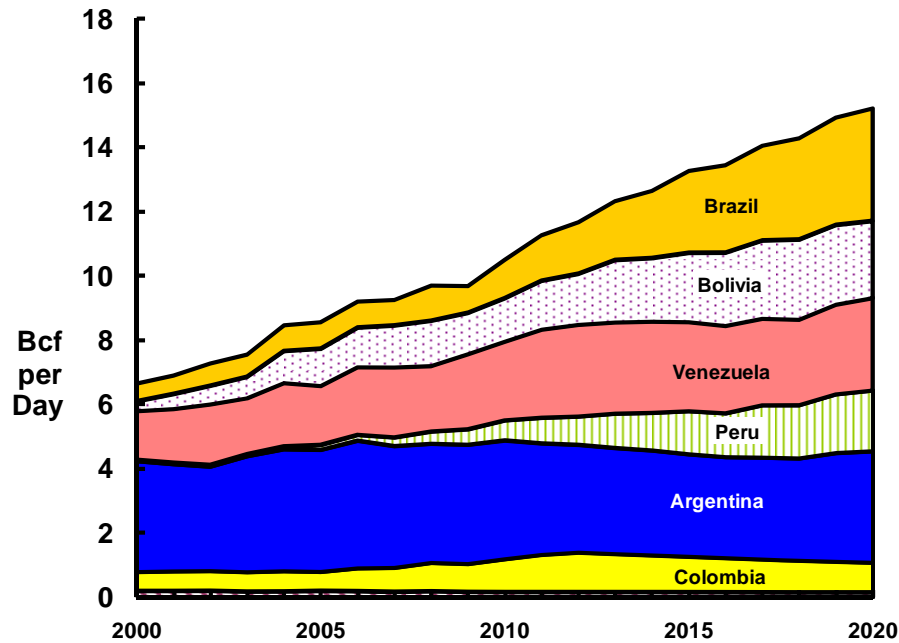
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Increasing Demand: Strong Economic Growth Drives Natural Gas Demand

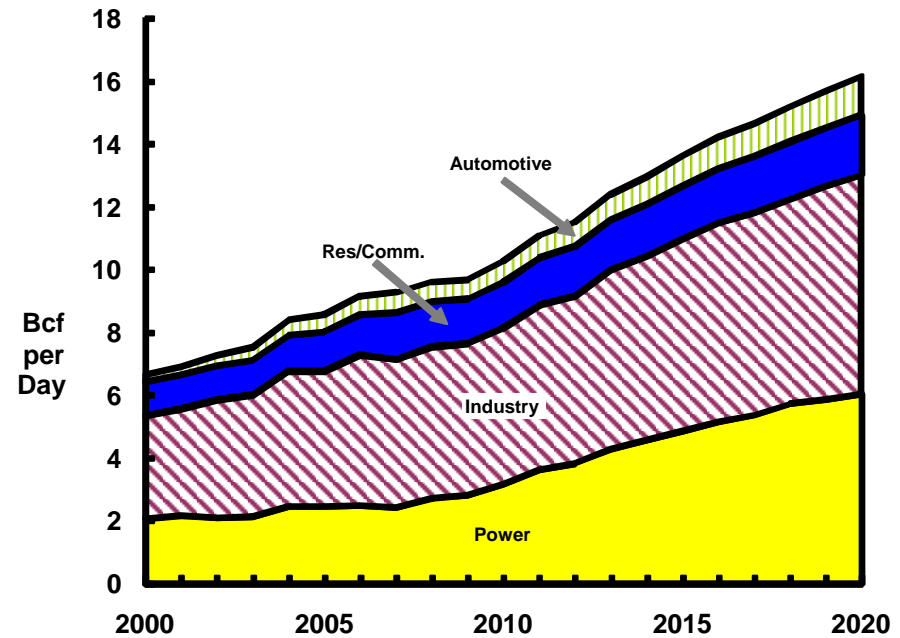
Gross Production

CAGR = 3.8% (2010 – 2020)



Gas Demand Evolution

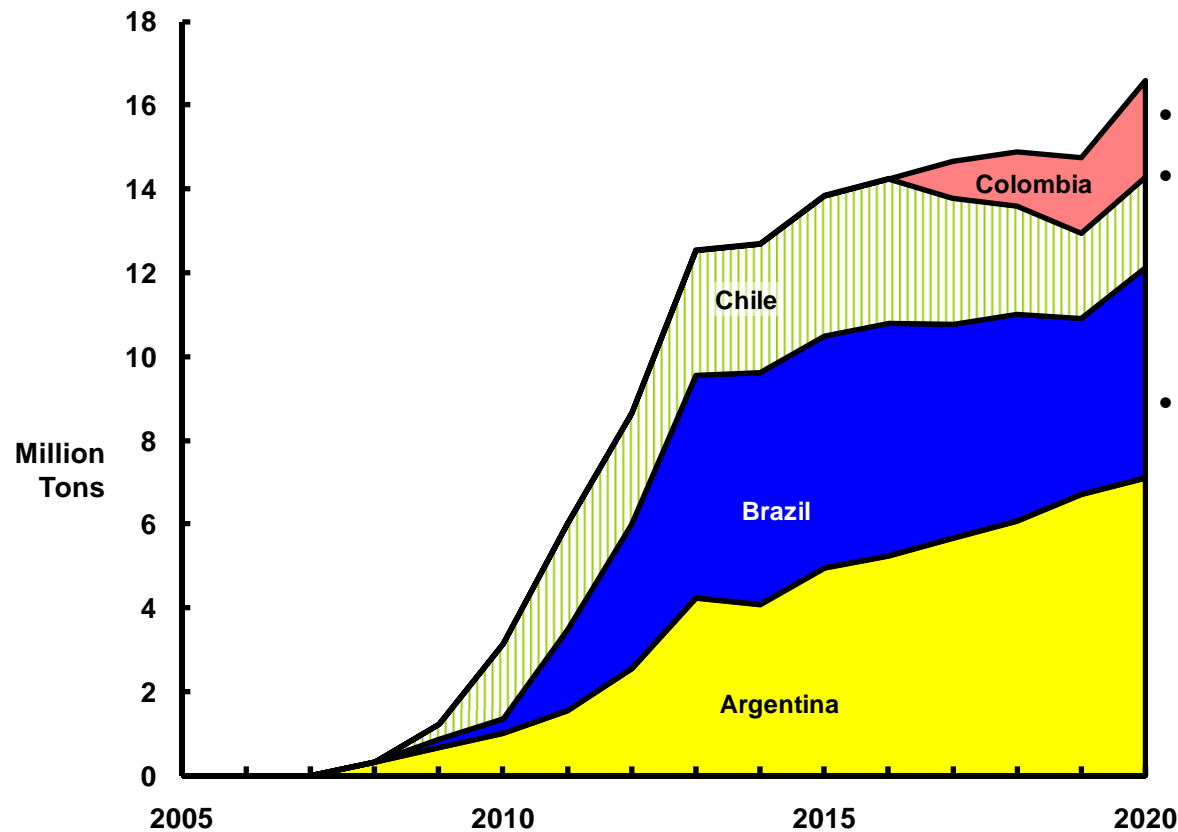
CAGR = 4.6% (2010 – 2020)



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Source: IHS CERA

Latin America: From a Regional to a Global Solution



- **A growing gas supply gap**

- **Main drivers for LNG**

- Security of supply
- Diversification
- Flexibility

- **LNG displaces net pipeline imports due to**

- Production declines
- Uncertainty in Bolivian gas
- Political issues
- Quick solution
- Uneconomical long-distance pipes



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Source: IHS CERA.

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LNG in The Center Stage: Diverse Motivations



 Net gas importers
 Net gas exporters

Source: IHS CERA.

-  **1** Gas imbalances
-  **2** Security of supply
-  **3** Diversification
-  **4** Flexibility

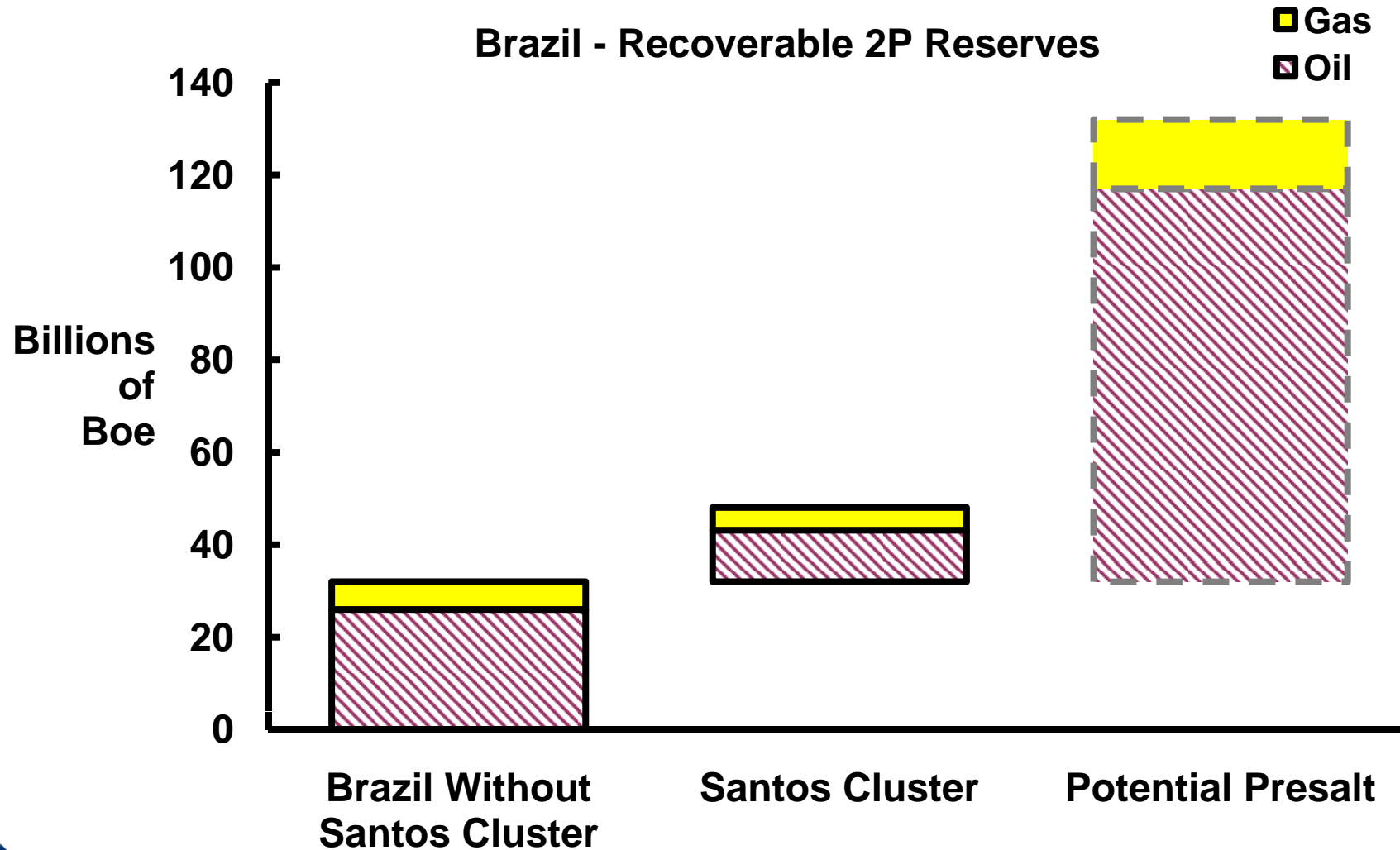


Brazil



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The Gas Potential in Presalt



Source: IHS Cambridge Energy Research Associates.

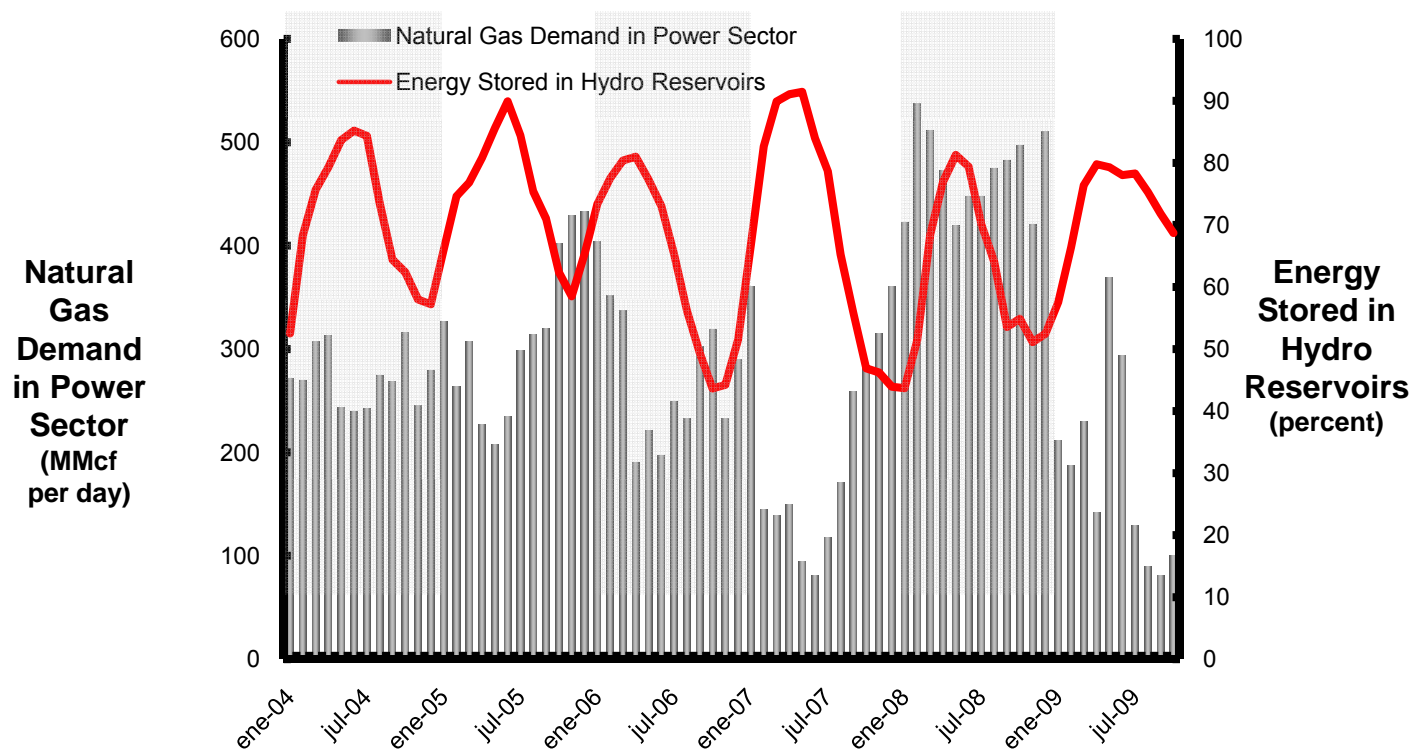
Note: Presalt fields taken in consideration are: Bem-te-vi, Carmaba, Carioca, Guara, Iara, Jupiter, Parati, Tupi.

The Gas to Oil Ratio in Tupi is higher than 200 m³/m³ which is 1108scf/barrel

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Power Sector Gas Demand Seasonality Calls for Added Flexibility in Gas Supply

Power Sector Natural Gas Demand



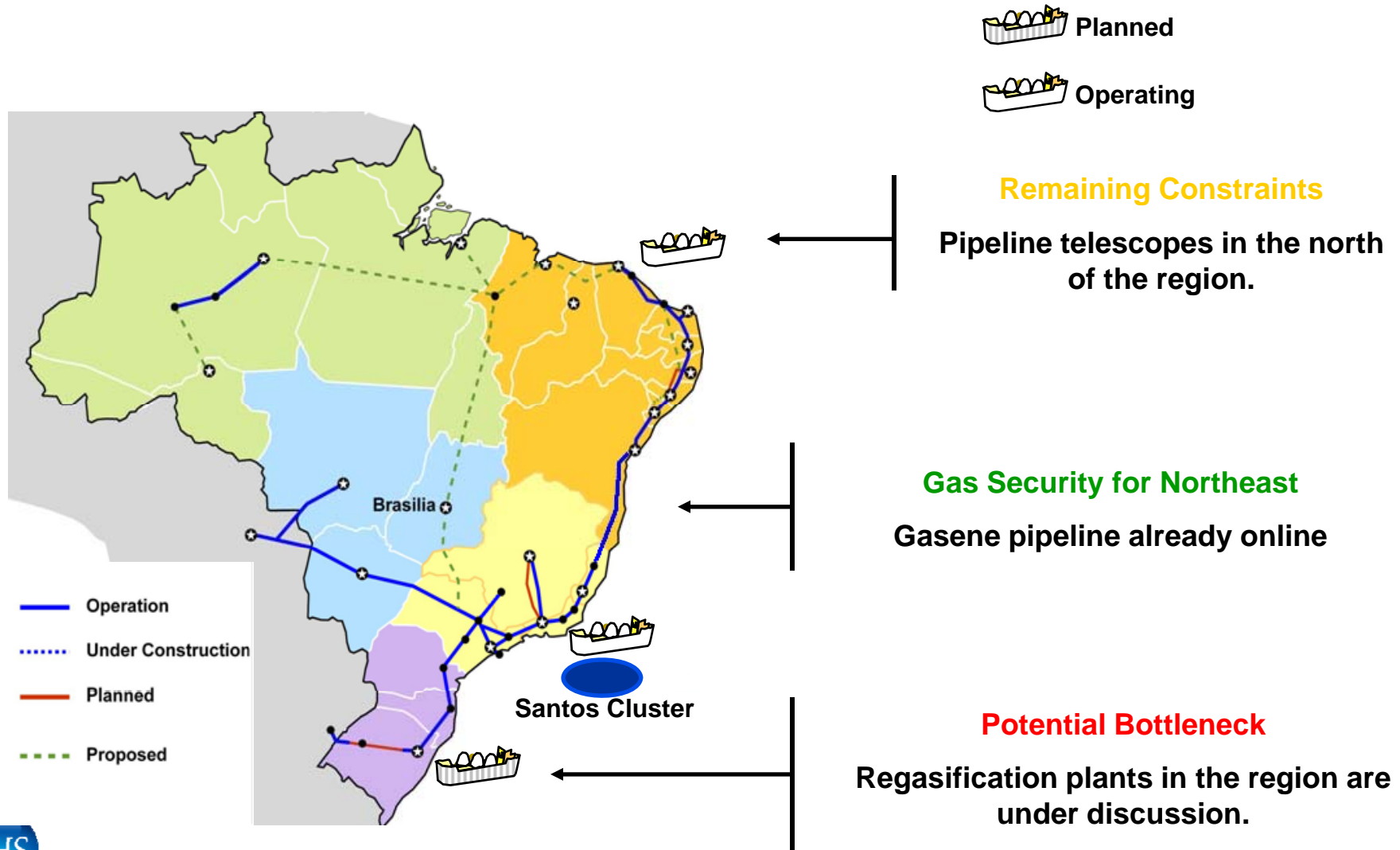
•Absence of storage facilities to accomodate fluctuations
•Seasonal variation can reach 760 mm cf per day (21 mm cm per day) in 2020



Source: IHS CERA, Abegas; Canal Energia..



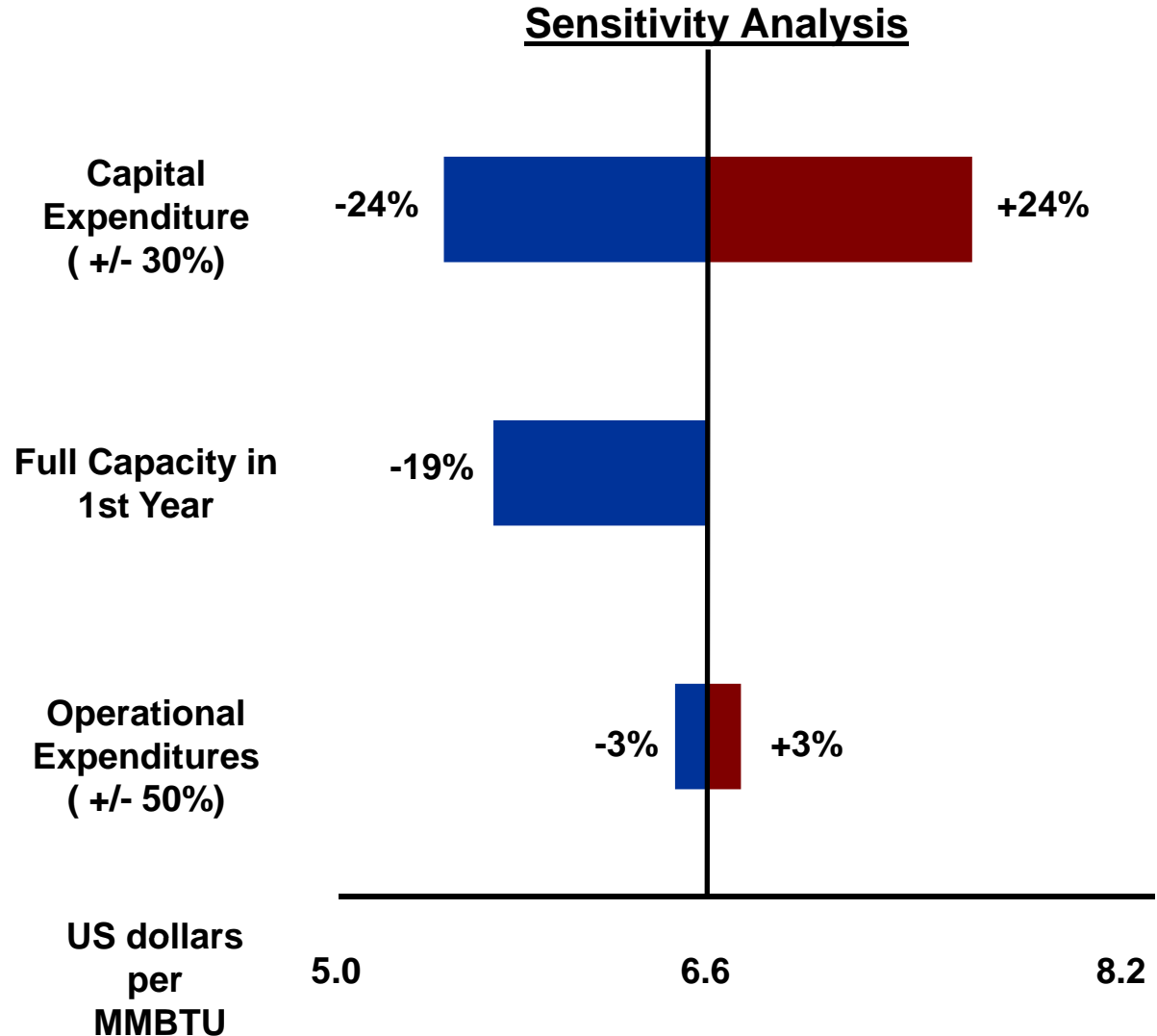
Transport Bottlenecks Highlights the Role of LNG.



Estimated Break Even Price for Presalt FLNG

Base Case Assumptions

- Capital Expenditures: US\$5 Billions
- Operating Expenditures: US\$20 Millions/ton
- Plant Capacity: 3.5 tons per year (13.3 MMcm per day)
- All Capital development and operating costs are allocated to oil development

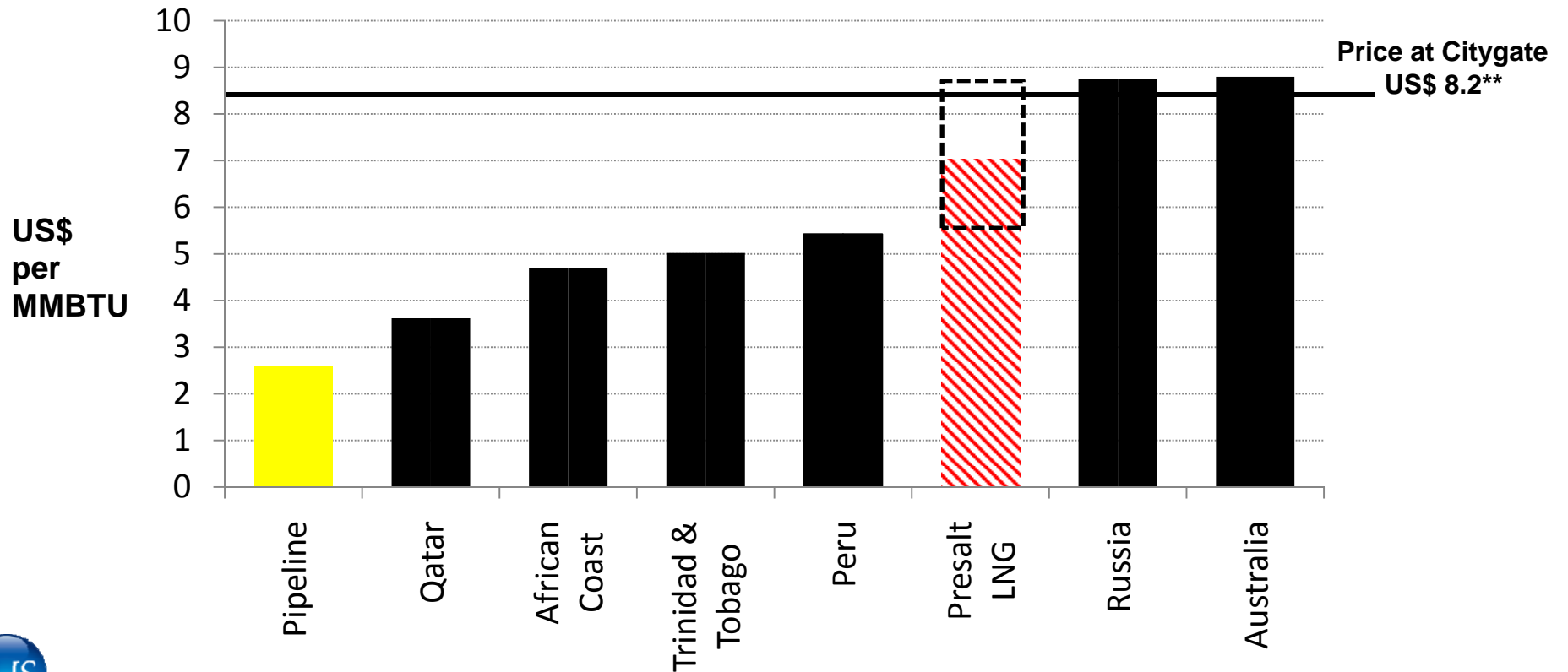


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Source: IHS CERA.

Competitiveness of Presalt FLNG at Guanabara Bay

Weighted Average Cost of New Liquefaction Projects in Selected Regions*



*Include feedgas, liquefaction and shipping cost and regasification cost at Guanabara Bay Terminal. Project costs in each region are weighted by their nameplate capacity

** Average 2009



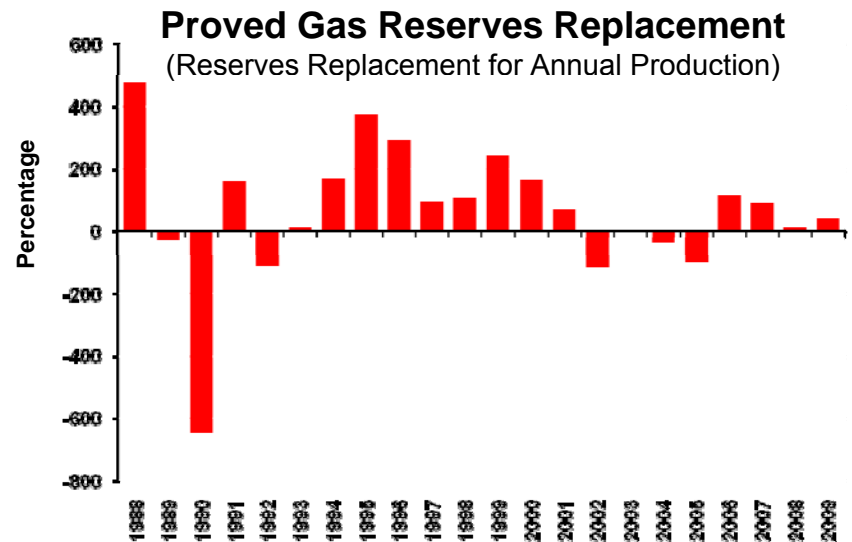
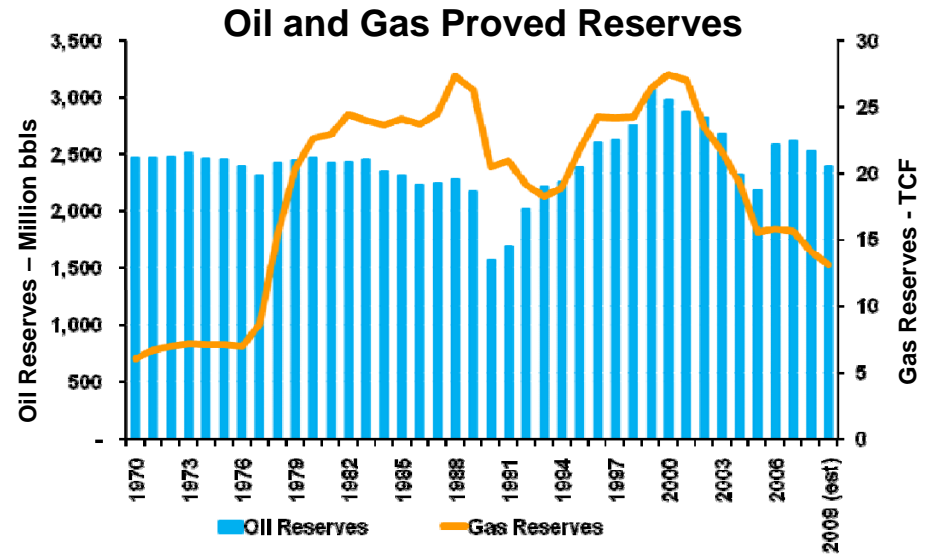
Argentina



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Declining Oil and Gas Reserves

- **Lack of adequate prices affected significantly reserves replacement, as investors retreated**
 - However, potential exists for small and medium sized targets, subject to renewed and increased exploration investments
- **Sharp decline in reserves requires strong incentives to revert condition of net importer of oil and gas**



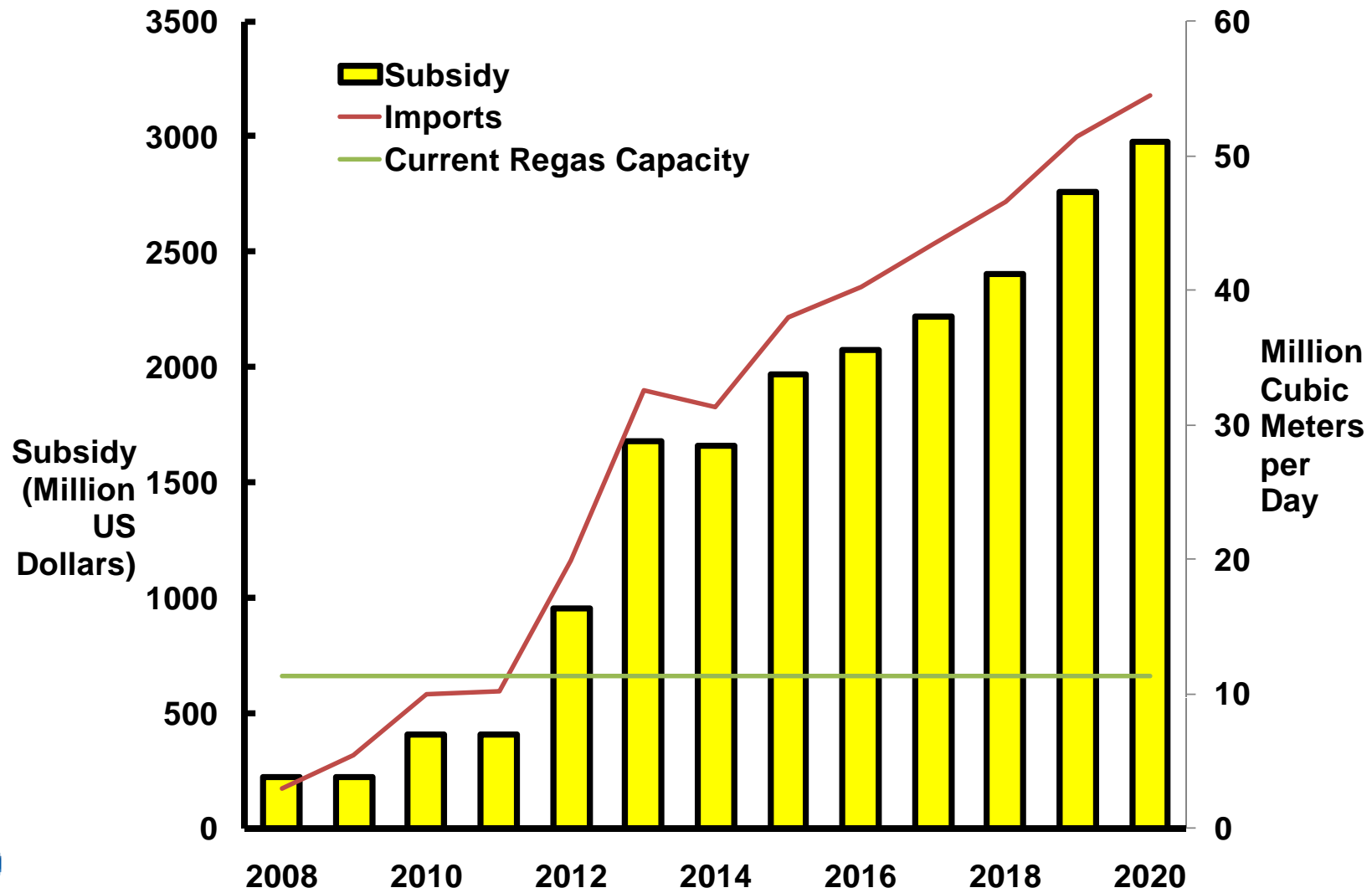
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Source: Argentine Secretariat of Energy

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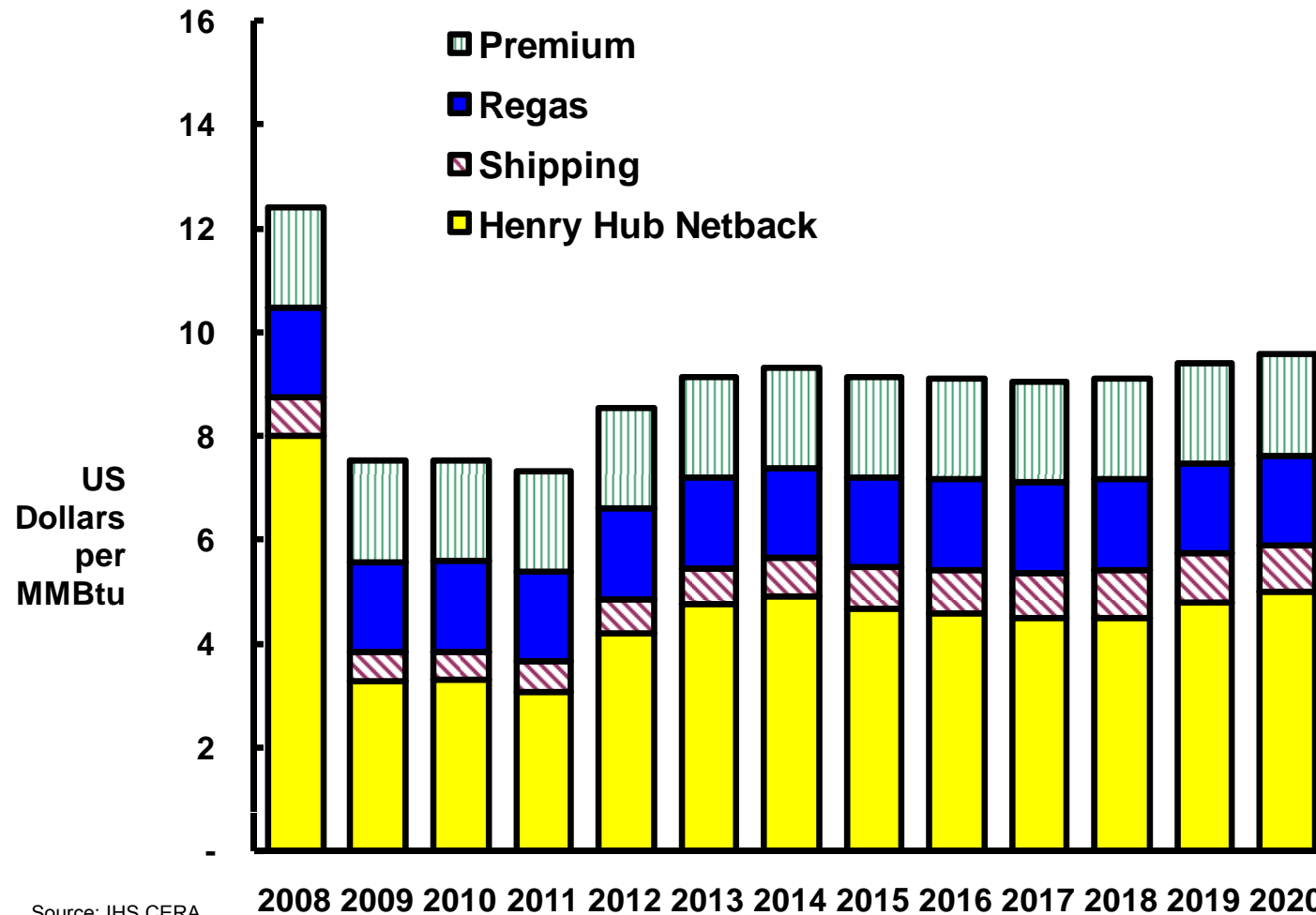
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Subsidies and Imported Volumes Become Significant in Argentina



Argentine LNG Price Outlook

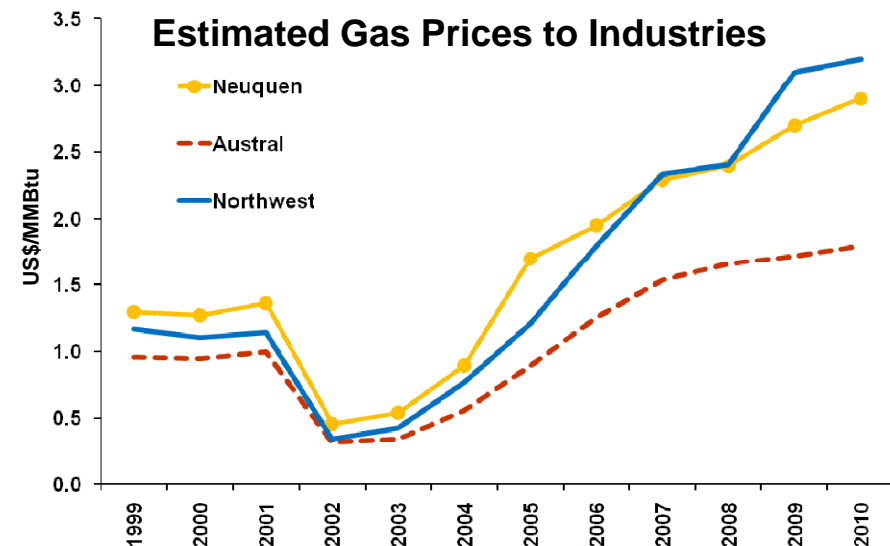
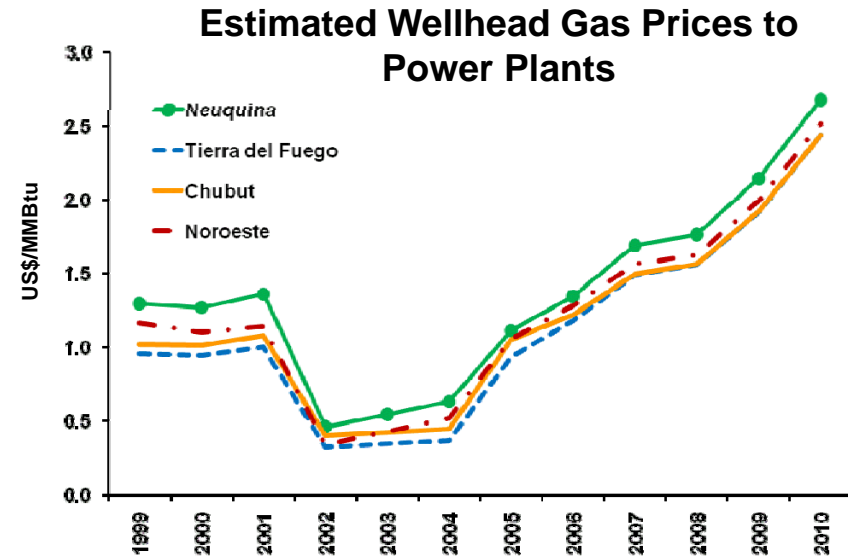
- **High Regas cost and price premium add significantly to LNG Cost**
 - Regas cost is about \$1.40 more than in the US Gulf Coast
 - Premium adds 20-35% to the cost



Source: IHS CERA.

Wellhead Gas Prices Recovering Slowly as Residential Prices Do Not Move

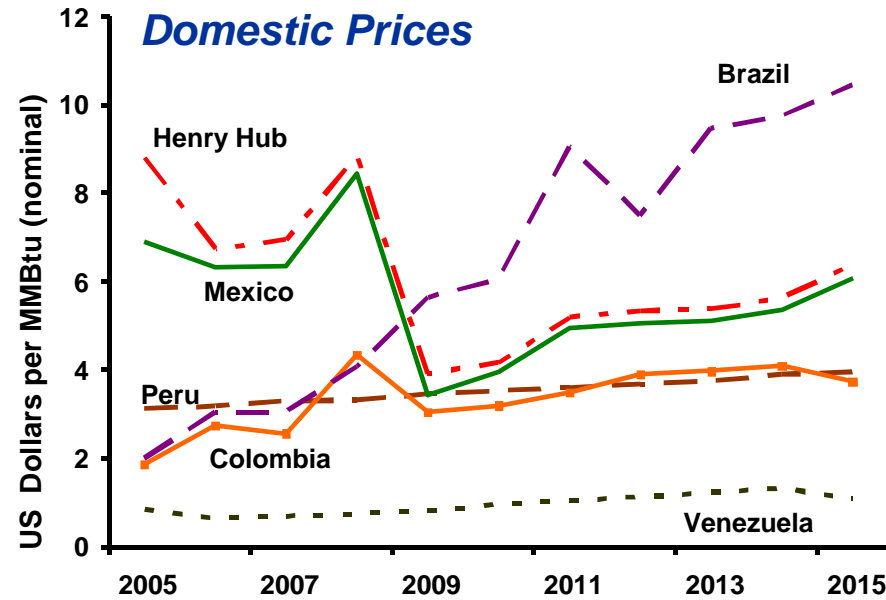
- Differentiated prices for each consuming segment of the market
- Industrial market ready probably will receive further increases in prices
- Average prices are dragged down by low-priced increasing volumes to residential, commercial and CNGV segments



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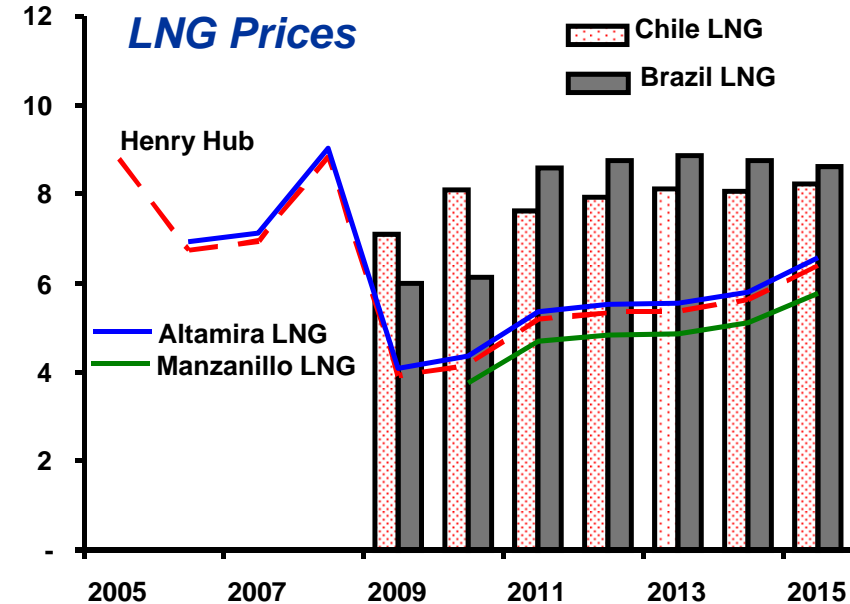
Source: IHS CERA

Latin America: Pricing Dichotomy



Differentiated prices for domestic markets

- Only Mexico has an international gas price linkage
- Gas market intervention through escalators, discounts or subsidies
- Prices also linked to alternate fuels



LNG gradually sets price benchmarks

- Price linkage to international markets (gas, oil, substitute fuels)
- Security of supply, diversification and flexibility come at a market price



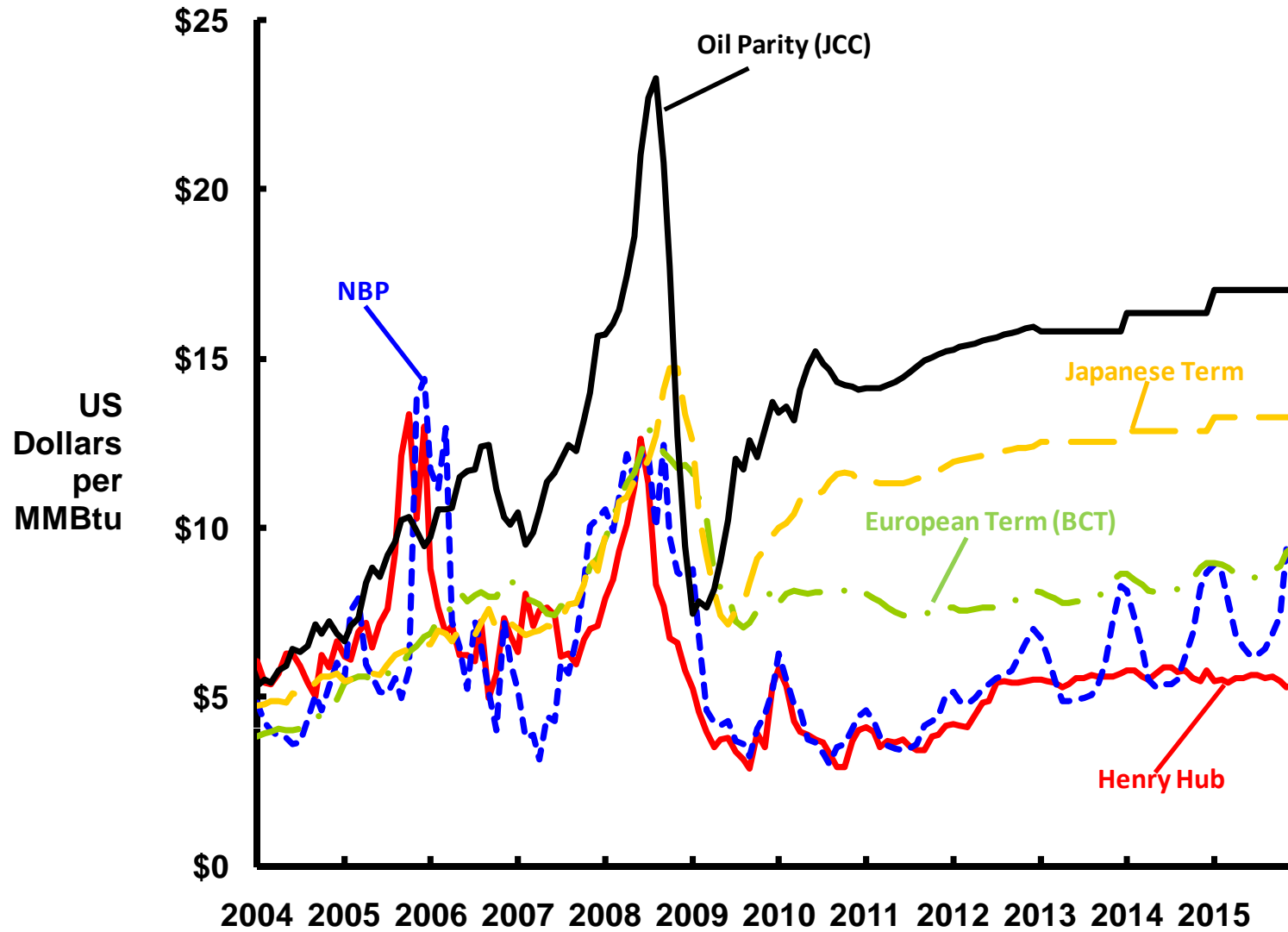
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Oil-Gas Price Relationship



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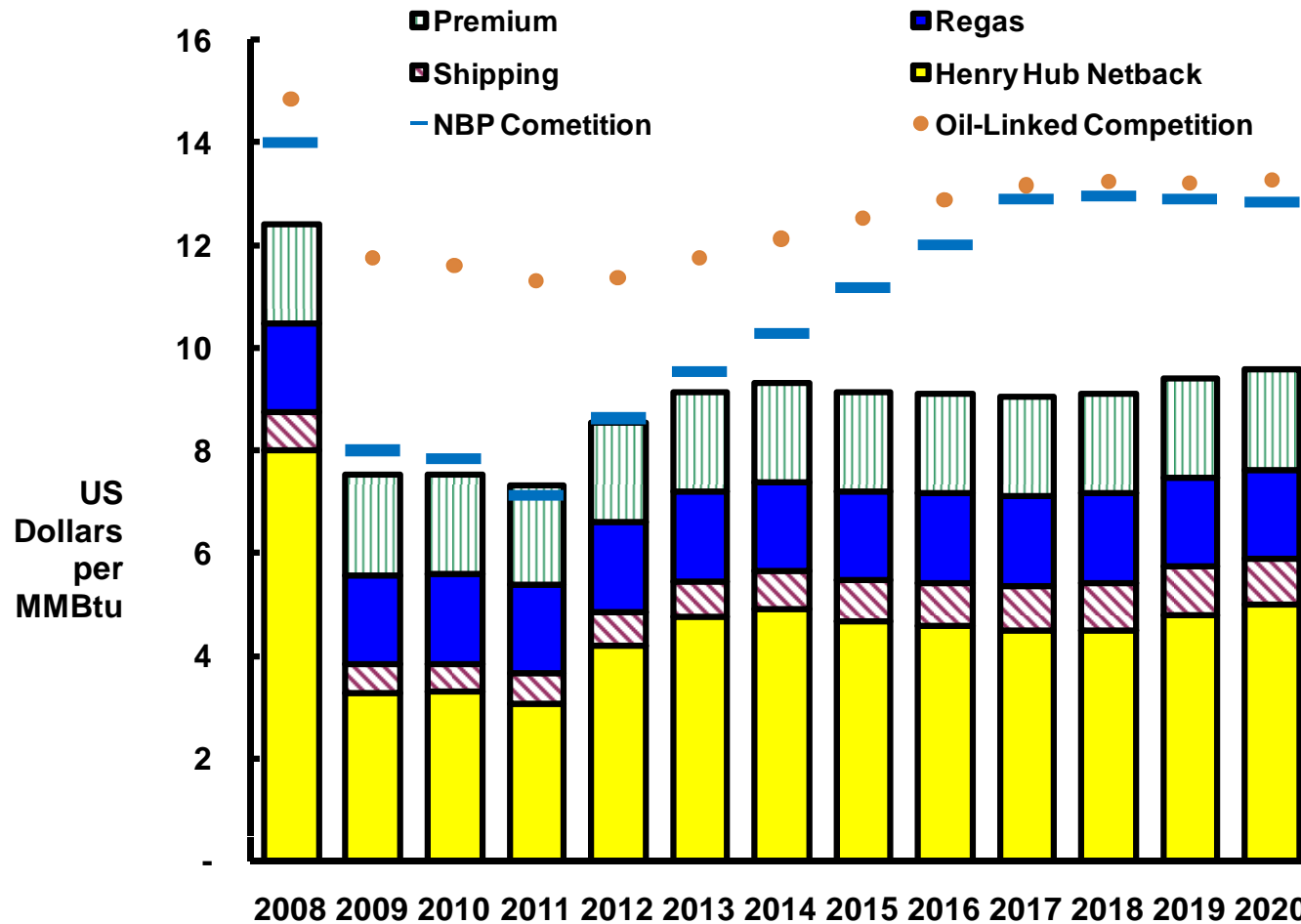
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Henry Hub Might Not Be the Right Benchmark

- **Relatively low prices in the United States are likely to keep significant amounts of LNG away from Henry Hub**
 - Next competing market becomes the Northwest Europe (NBP prices)



Source: IHS CERA.

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Latin American LNG

Key Messages

- **Challenges**

- Increasing gas demand driven by sustained economic growth in the region
- Slowing productive capacity additions give rise to growing need for LNG

- **Uncertainties**

- Scale and development strategy of Pre-Salt
- Will Bolivian production keep up with commitments?
- Can governments continue to pay for “expensive” LNG while preserving subsidization?
- Will unconventional gas spread over Europe and Latin America

- **Key Implications**

- Significant amounts of LNG will stay away from Henry Hub which will cause problems to Mexico and other likely importers in the Caribbean.
- LNG volumes directed to largest markets in South America like Brazil and Argentina will compete against northwest Europe maintaining linkage to oil prices.



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