


Value and Growth*

in the liquefied natural gas market

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*connectedthinking

PRICEWATERHOUSECOOPERS 

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Introduction

- PwC developed “Value and Growth* in the liquefied natural gas market” in 2006 and our report was released to the public in February 2007
- Report looks at challenges for various players in LNG market
- Views on how the LNG market is evolving and changing
- Perspective on where LNG is now and where it will be in the decade ahead

Introduction

Liquefied natural gas (LNG) is one of the fastest growing sectors of the energy market. It is expected to almost double in size between 2005 and 2010, delivering around 40% of global gas supply growth in just five years.

Source: International Energy Agency, *Natural Gas Review 2006*

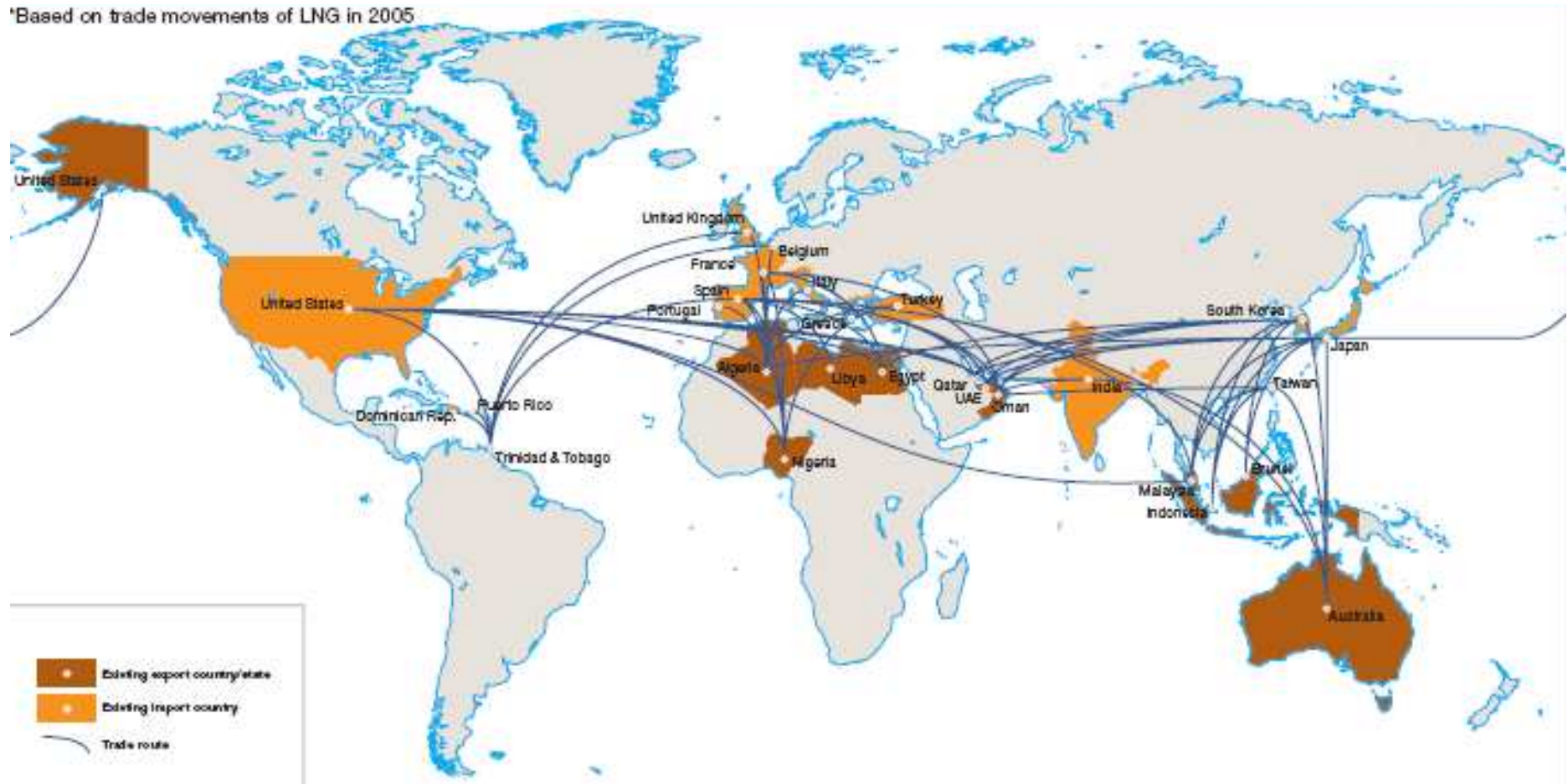
LNG's Evolution

- First experiments to liquefy gas took place in 19th Century
- First commercial plant opened in 1941 in Ohio
- First LNG sea transportation was in 1959 – cargo shipped from US to UK
- Suppliers emerged – Algeria, Indonesia
- Recent evolution takes LNG from regional to global market
- Security lies in long-term contracts
- Worldwide currently 13 countries export LNG and there are approximately 40 LNG import terminals

LNG trade movements – 2005*

“We are shifting towards a global market that is set to be fairly evenly balanced between Asia, Europe and North America.”

*Based on trade movements of LNG in 2005



Key Findings

- Price uncertainty is one of the biggest obstacles for LNG
 - To date, there has been no uniform global price for LNG
 - Prices tend to be referenced against natural gas in markets (where gas is traded) or to oil
 - High infrastructure costs mean that long-term contracts are crucial, however LNG prices are volatile
- LNG is quickly shifting from a regional to a global market
 - Previously, the LNG trade focused on countries with limited fuel choices (Japan, South Korea)
 - Today, LNG growth is focused on supplying larger markets (UK, US)

Key Findings, *continued*

- Greater contract complexity
 - Dynamic trading markets are introducing considerable complexity into supply and purchase agreements
 - Contract pricing....generally will reflect the best estimation of the LNG price in the destination markets
- Knowing the market and regulatory environment is critical for downstream
 - Developed markets (such as the EU) regulatory environments are more complex and variable, involving third party access, environmental constraints, etc.
 - In developing markets, tariff regulation and other policies may not be fully established, but will impact project cost recovery
 - Geopolitical forces at work (Russia, Nigeria)

Key Findings, continued

- Optimizing asset portfolios
 - Companies are struggling to optimize their LNG portfolio of assets and contracts to maximize value
 - Companies must identify, assess and manage the increasingly complex interdependence and uncertainties in the evolving LNG market

Key Findings, *continued*

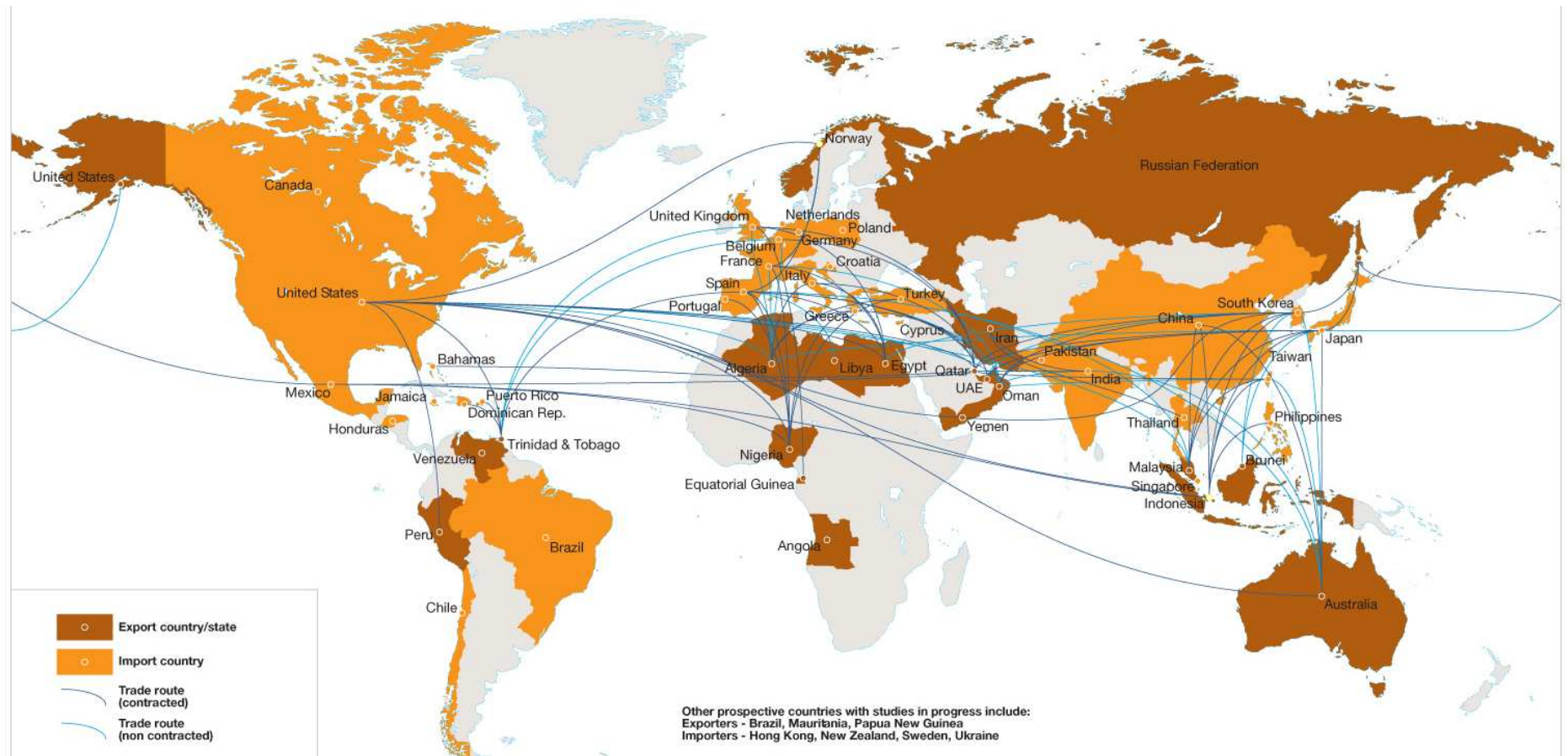
- Four LNG asset strategic plays at work
 - Upstream push: National oil companies and small independents with upstream supplies associated with liquefaction plant now building presence downstream
 - Market pull: Downstream utility supply companies seeking to diversify supply sources buying regasification facilities
 - Full integration: Large IOCs see gains from participating in the complete LNG value chain
 - Portfolio players: Companies who manage their assets as a portfolio in many parts of the LNG value chain

Key Findings, *continued*

- Managing risks along the value chain
 - High gas prices can lead to demand reduction
 - Upstream companies face the highest risks due to development costs, reserves uncertainty, project completion and facilities performance
 - Marketing company (exporter and shipper) face volume and price risks arising from trading activity and end-market access
 - Liquefaction and regasification operations face the lowest risks, and tend to attract a lower rate of return

LNG trade movements, 2015*

Major new developments are set to come onstream over the next decade. The commercial risk posed by the shortage of LNG over the next five years or so highlights the importance of such developments.



The future

- Key exporting countries – Qatar, Nigeria, Australia, Egypt, Iran, Russian Federation, Yemen
- Key exporters (companies) – NOCs (Qatar Petroleum, NNPC, Sonatrach, NIOC, Pertamina and Petronas) and IOCs (Shell, ExxonMobil, BP and Total)
 - Increasingly competitive marketplace
- A truly global market? – LNG's competitiveness against other fuel sources will influence the rate of growth
- Technological innovations could open market to many new players

Future trends

- Small-scale liquefaction
- Liquefaction hubs
- Alternative source and uses of LNG
- Gas storage for peak shaving
- Shipboard regasification

“Technological innovation could open up the prospect of many more players with a greater number of loading and offloading options.”

Questions?

Thank you.

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