LNG Projects & Markets
Past, Present & Challenges Ahead

Presented by:

Don Andress

Mostefa Ouki

Nexant

[Part 2: Markets, Past, Present & Challenges Ahead]

United States Association for Energy Economics

Houston, Texas – September 14th 2006

Outline

- Global Gas Situation
- Global Gas Trade
- Emergence of Atlantic Basin
- Asia's Existing & Emerging Gas Markets
- Challenges Ahead

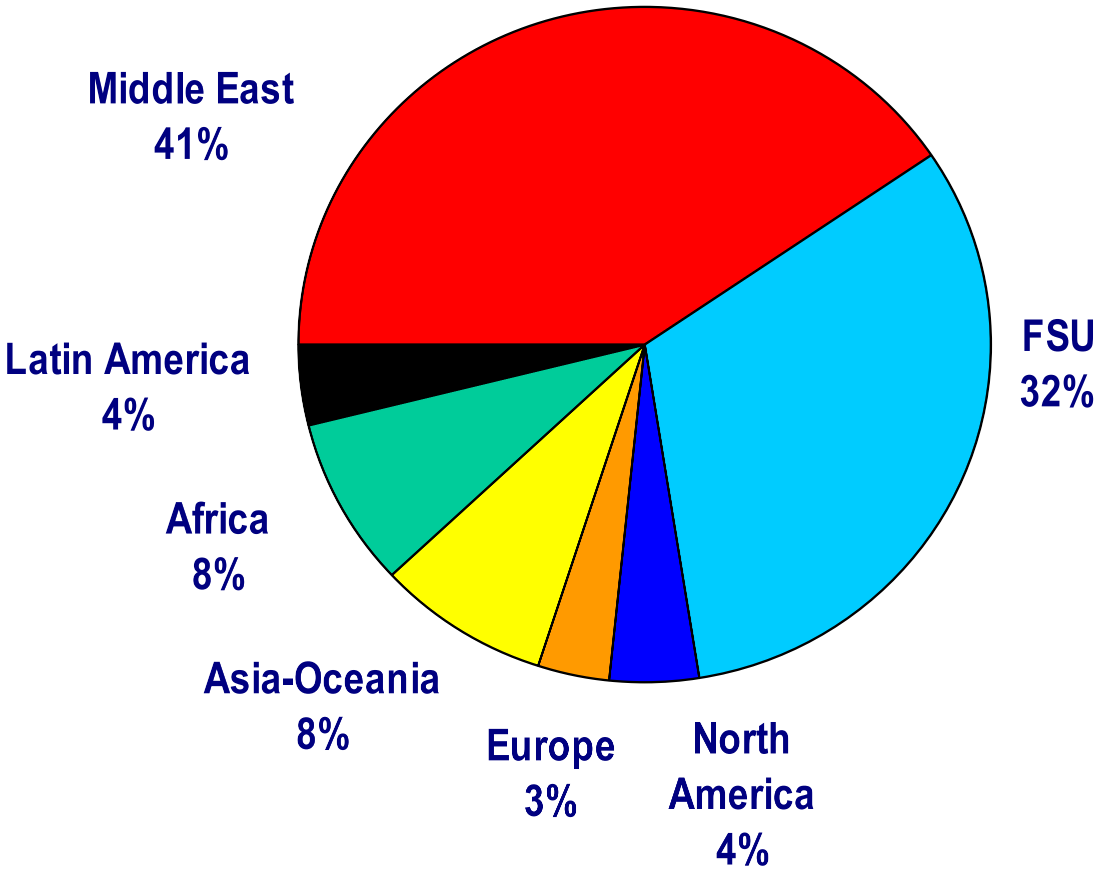
Global Gas Situation

Global Gas Reserves Endowment

Source: Cedigaz

Total World
Proven Gas Reserves
January 2006

180.5 trillion cubic meters

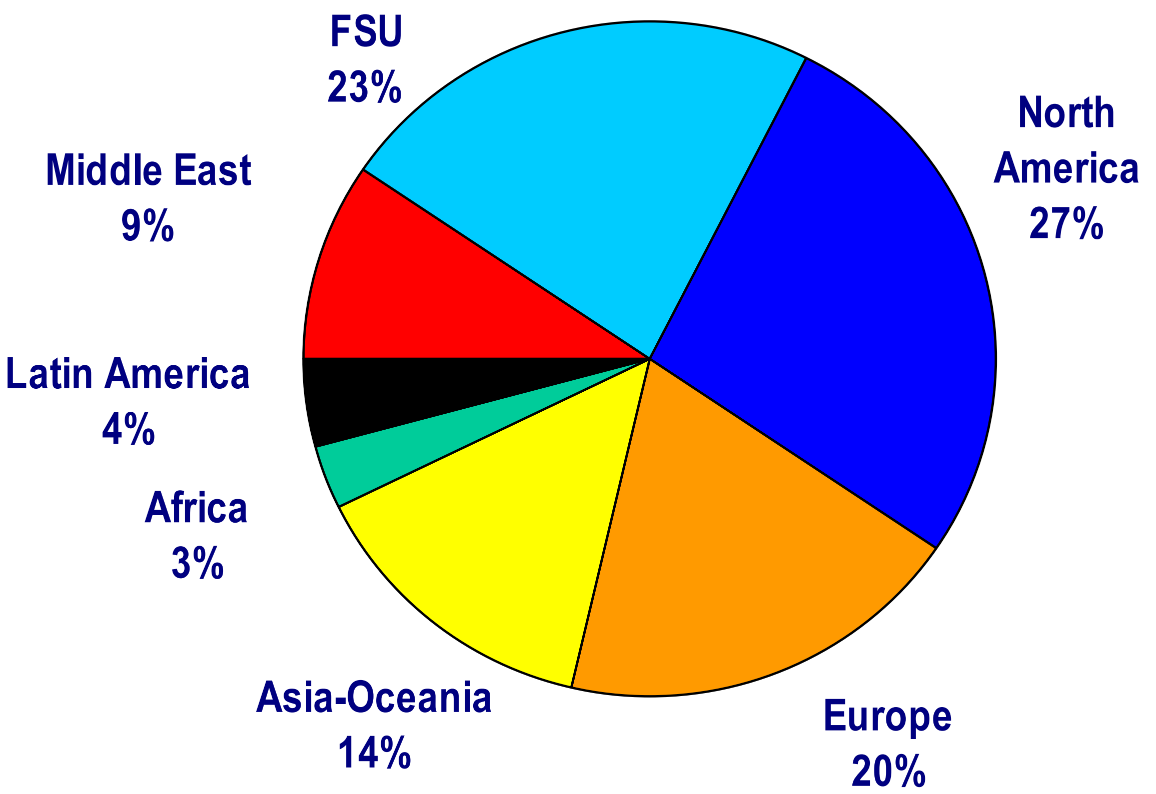


Global Gas Consumption

Source: Cedigaz

Total World Gas Consumption 2005

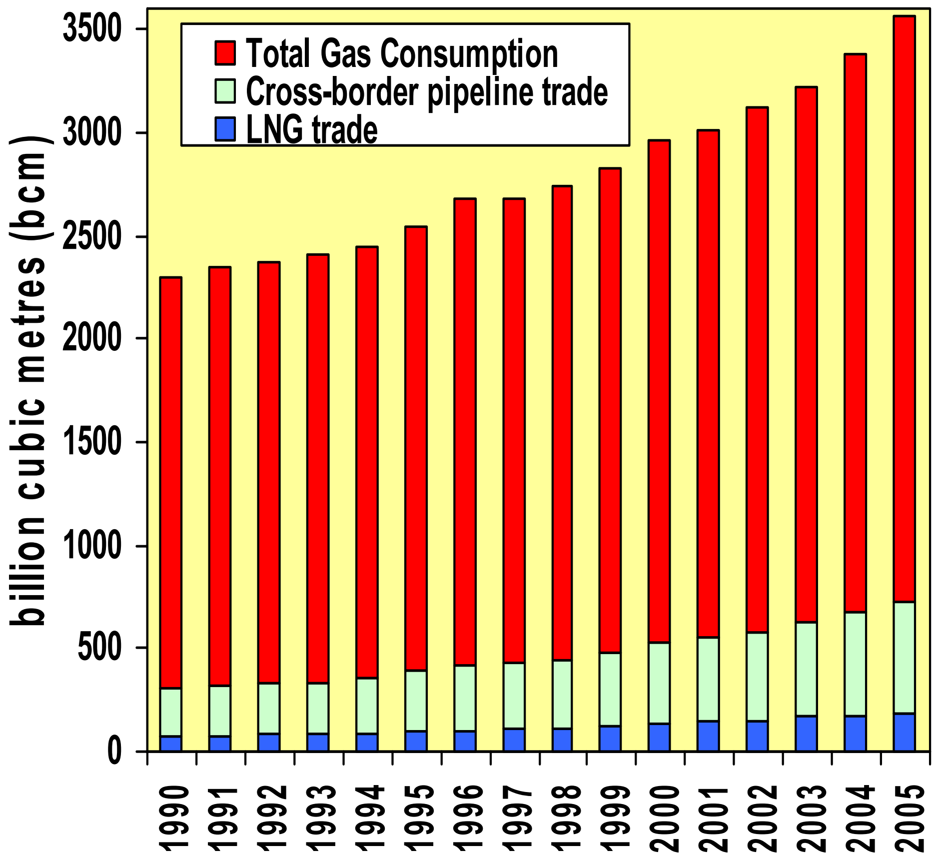
2.8 trillion cubic meters



Global Gas Trade

Global Gas Trade & Consumption: 1990 – 2005

Source: BP



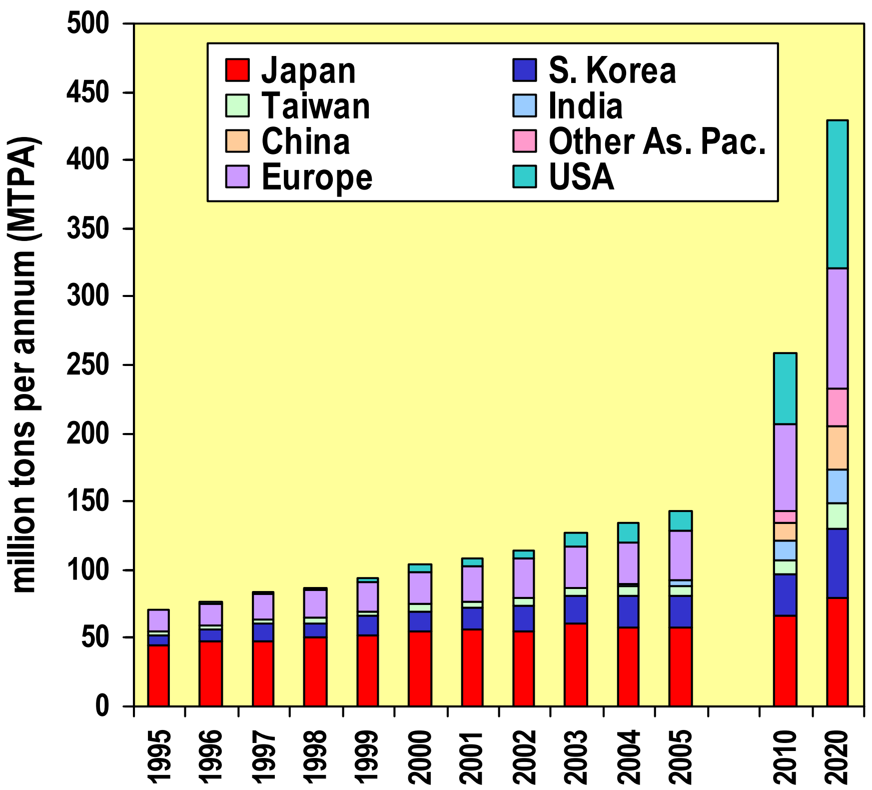
- Gas trade continues to account for less than a third of total gas consumed in world (15% in 1990 and 25% in 2005)
- Gas exports by cross-border pipelines continue to dominate international gas trade (76% in 1990 and 74% in 2005)(*)
- LNG trade as a proportion of global gas consumption doubled between 1990 and 2004 (~3.5% in 1990 to ~7% in 2005)
- An almost three-fold increase in total volume of LNG traded b/w 1990 and 2005

(*): Excludes intra-FSU trade

Global LNG Trade

Sources: BP, Nexant

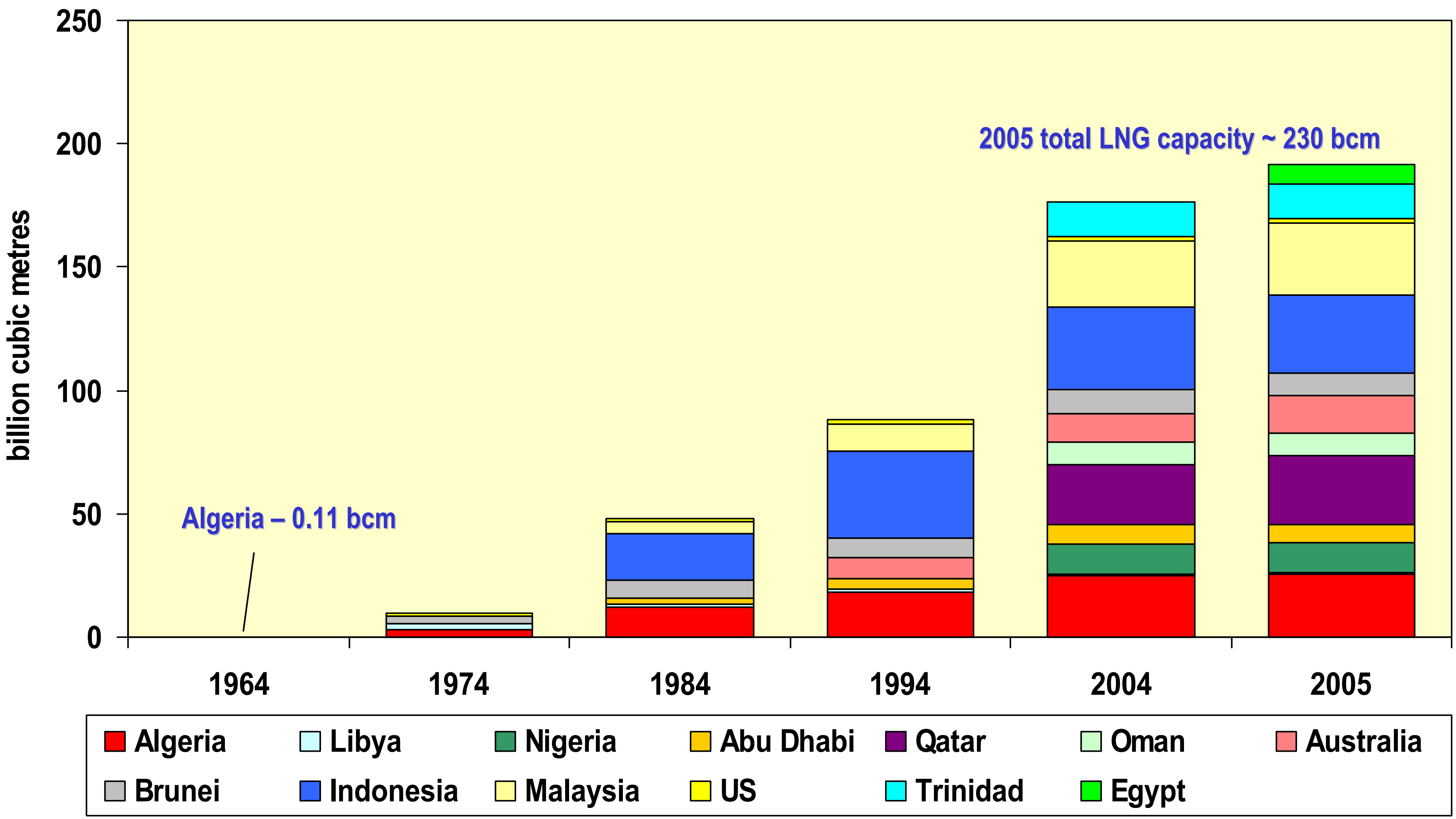
LNG imports & potential LNG demand



- Substantial expansion of global LNG trade since the mid 1990s (average annual growth of 7.5%)
- Over the next 10 years, LNG trade planned to grow at annual average rate of ~ 10%
- Major gas markets with declining indigenous resources, such as the UK and the US, are expected to become large LNG importers
- Emergence of new Asian gas markets (China & India) → new LNG importers with potential for rapid growth

Structure of LNG Exports: 1964 – 2005

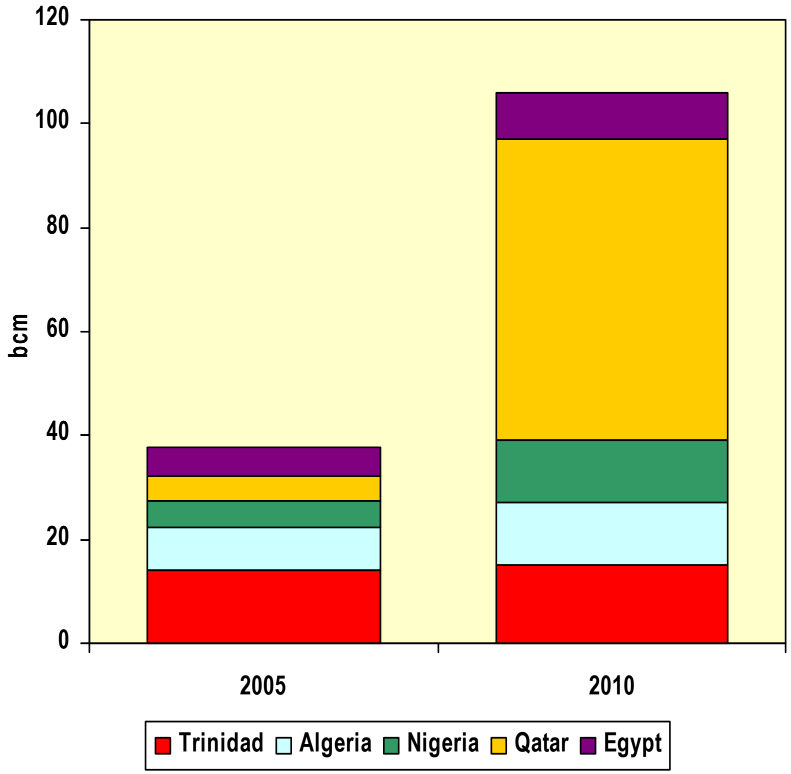
Sources: Cedigaz, BP



Emergence of Atlantic Basin

Atlantic Basin's key Target Markets

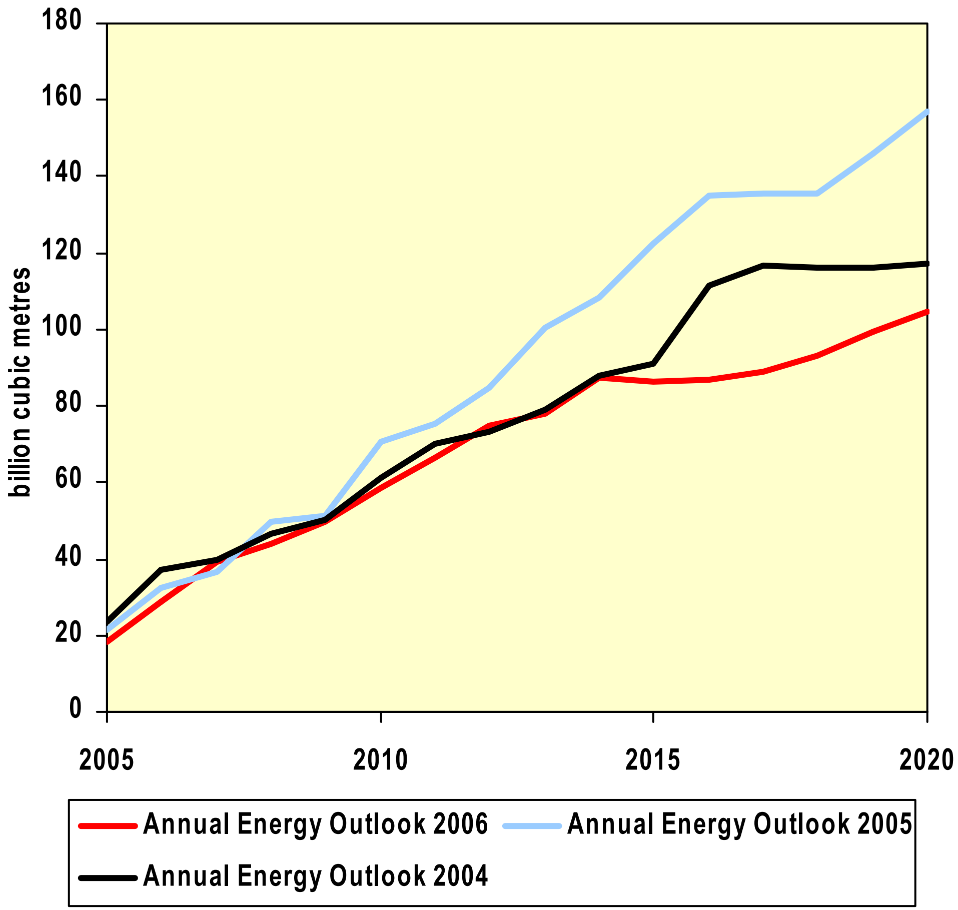
US - Spain - UK



- Significant LNG capacity expansions in Middle East and Africa will come on stream beginning of next decade
- Main targets for exports: Atlantic basin markets in North America and Europe
- Qatar expected to account for largest share of planned exports to US, Spain, UK
- Africa's gas exporters expected to play an increasingly important role in supplies to the Atlantic basin markets
- Large increase of LNG exports from Middle East & Africa targeting US market

US - Potential LNG Imports

US EIA LNG Import Projections



N:\LNG Capacity & Trade.xls\US EIA Projections

- 2006 US EIA LNG import forecast for 2010 is over three times actual level of LNG imports in 2005
- Projected increases in LNG imports starting in 2010 are below total planned LNG exports to the US from Middle East, Africa, Norway and possibly Russia
- LNG import forecasts over last three years show downward adjustments of US market expectations
- How much "high price" LNG could be absorbed without causing demand destruction and triggering other alternatives

UK Gas Import Capacity

Gas pipeline import capacity (~75 bcm)

- Expanded UK-Belgium (gas pipeline) Interconnector
- Vesterled pipeline from Norway to UK (existing)
- Balgzand (BBL) pipeline from the Netherlands (December 2006)
- Langeled pipeline from Norway (September 2006)

LNG import capacity (~ 40 bcm)

- Isle of Grain LNG (BP/Sonatrach) / initial supplies from Algeria (July 2005) + Expansion
- South Hook LNG (Wales) (QP/ExxonMobil) / supplies from Qatar (2007) + Expansion
- Dragon LNG (Wales) / developed by BG, Petronas and Petroplus (2007)

Projected UK gas demand by 2010 is ~ 110/115 bcm - gas imports estimated at ~ 50 bcm

Southern Europe Gas Import Infrastructure

Cross-border pipelines from North Africa

- Algeria (2 pipelines in operation ~ 40 bcm pa + planned expansions)
- Libya (1 pipeline 8 to 11 bcm pa)
- Algeria (1 new pipeline under construction and another one planned)

LNG Terminals

- New LNG terminals and terminal expansions in Southern France, Spain, Italy & Greece
- Other new terminals or capacity expansions planned

Well developed gas import infrastructure (Pipeline & LNG) and proximity to large sources of supply in North and West Africa

Asia's Existing & Emerging Gas Markets

Asia Pacific Markets

- Japan – World's largest LNG market
- Uncertainty about role of nuclear power in Japan
- Restructuring of utility industry in Japan, S Korea and eventually Taiwan
  - →Move from traditional Asia-Pacific model of large integrated gas and power monopolies to an increasing number of gas buyers (market fragmentation)
  - →But security of supply issues may delay transition
- Concerns about Indonesian gas supplies and supplies in general / Competing with Atlantic Basin markets for incremental LNG supplies & to replace declining supplies
- Competing for supplies with new emerging markets and in future West Coast / N America
- Emergence of Australia as a key LNG player in the region
- Importers (Japan) seeking increasing equity participation in liquefaction capacity
- New flexible contractual arrangements, incl. swap arrangements, for buyers & sellers

Asia's New Emerging Gas Markets

- Emergence of high-growth energy consuming countries: China & India
  - Main drivers: power & fertilizers
  - Low/subsidized fuel & feedstock prices
  - Financial constraint & affordability issues
  - Impact of new indigenous gas supplies in some regions
  - Coal's dominant position
  - Gas infrastructure development
  - Government policy & energy sector restructuring

China's & India's energy markets distinctly different from Japan & S Korea's markets. But very large markets with potential rapid gas demand growth

Challenges Ahead

Challenges Ahead

- *Significant LNG capacity expansion targeting Atlantic basin markets*
- *How much Atlantic basin, especially the US, can absorb under current conditions?*
- *Apart from Qatar's capacity expansion, which is well underway, other project expansions and new projects may face challenges to meet their planned schedules*
- *Impact of seriously constrained EPC contractor availability & high input factor prices*
- *Impact of structural changes in crude oil price movements and gas price volatility*
- *Availability of "competitively" priced supplies & role of nuclear power and coal*
- *Adapting to changes in contractual arrangements and challenges of project funding*
- *Striking the adequate balance in gas trading b/w "LT" contracts and spot/short term transactions (arbitrage opportunities / meeting seasonality needs)*
- *Difficult transition period, but expected easing of supply (& infrastructure) constraints at the beginning of next decade and an adjustment of gas demand expectations*

Nexant Contact Information

For more information about Nexant contact us at:

Nexant Limited

Griffin House
1st Floor South
161 Hammersmith Road
London W6 8BS
United Kingdom

Dr. Mostefa Ouki
Manager, Oil & Gas
Tel: + 44 20 7950 1580
Fax: + 44 20 7950 1550
E-mail: maouki@nexant.com

Nexant Inc.

Houston II Center, 909 Fannin Street
Suite 1275
Houston
Texas 77010 - 1038
USA

Don Andress
Principal, Oil & Gas
Tel: + 1 713 982 5551
Fax: + 1 713 739 0741
E-mail: dandress@nexant.com