



## ASIA LNG MARKET INTEGRATION



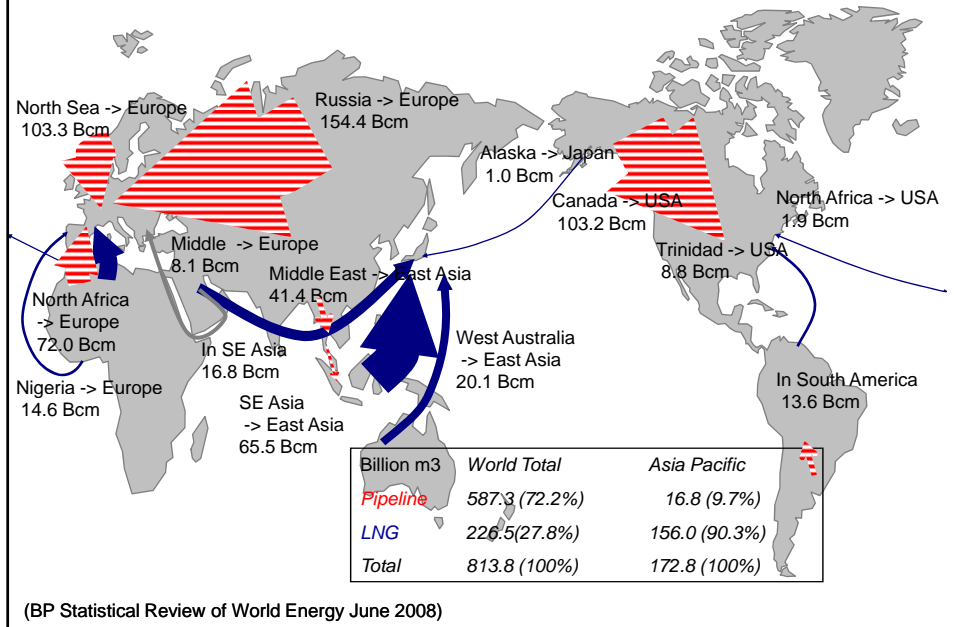
## Main Drivers



- Secured investment by long term contract
  - Investments are necessary for both LNG upstream and LNG down stream
  - 20 years long term contract secures huge investment
  - Low country risk, stable developed countries
- Regional characteristics
  - Less gas resources in NE Asia ~ less developed NG pipeline infrastructure
  - Natural gas resource center in SE Asia and Oceania
- LNG technology improvement: more various sources available
  - Variety of scales of LNG plants
  - Various gas sources for LNG (mid/small gas field, CBM, etc.)
- Economic Growth and players are increasing
  - Japan, Korea and Taiwan are still increasing LNG infrastructure
  - China & India are new main demand growth center

**Drivers for Asian LNG Market: Increasing demand and LNG facilities**

## Natural Gas Cross-Border Trade (2008)

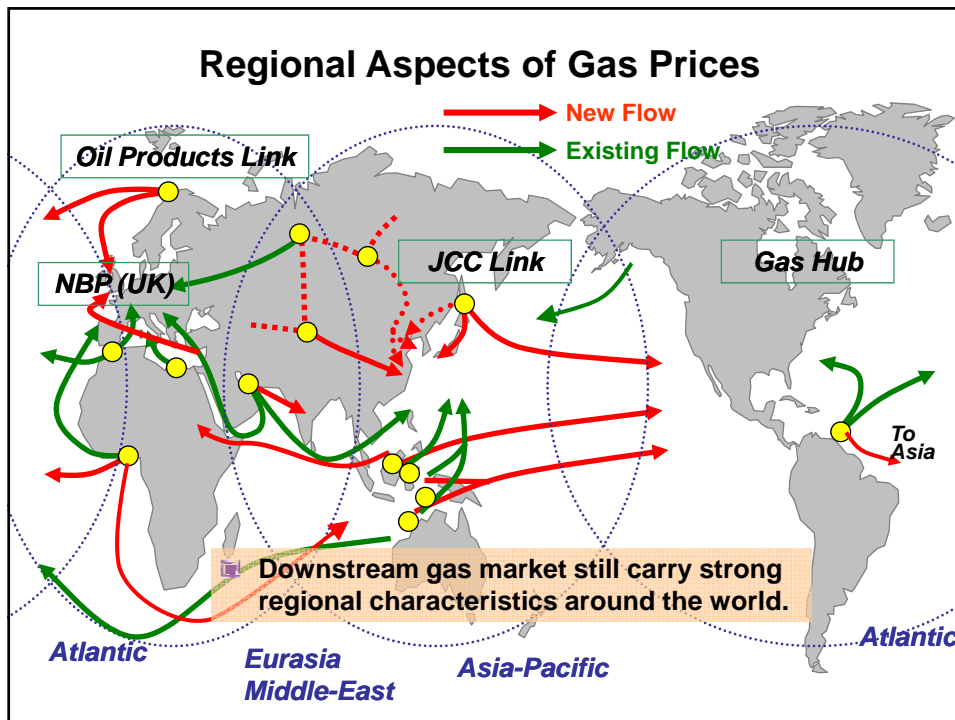



## Main Challenges




- Rigid LNG flow: Internal market
  - Long term LNG contracts are rigid and does not allow buyers to divert/exchange LNG even within the market
- Rigid LNG flow: market to market
  - Different price indexation between LNG markets (JCC, NBP, Henry Hub)
- Balance of long term and spot market
  - 20 years long term contract affected by high oil price and spot market LNG price
- Policy stability
  - Nationalism over resources affect commercial contract
  - Unpredictable change in policy prevent investment

**Main challenges: still underway to the integration**





## Main Policy options



- Regulation: Supply country
  - Is government's policy change the act of god?
  - Give consistency to the energy development policy
  - If changes are necessary, show mitigation process especially to the long term contracted projects
- Regulation: Demand country
  - Natural gas is an realistic mitigation energy source but emits CO2 though it is low
  - Show clear view to the environment counter measure process
- Energy security
  - Contract is bi-company basis, but need more governmental talks for mutual countries' benefit

**Policy and regulation: Consistency shall be cared and more governmental talks on energy security are necessary**



## Main Benefits



- Benefit for supply country: Economic development
  - Market integration may increase portfolio of demand and stabilize demand in total which may stabilize production and revenue
  - Infrastructural development can be expected
    - ~ if like to secure the profit, need rigid contract which may reduce market flexibility ~ balance of spot and long term
- Benefit for demand side country
  - More gas is necessary but demand may fluctuate by economy, other energy price in competition, nuclear, etc.
    - ~ self adjustment between the buyers give more flexibility and stability
- However...
  - Mind LNG development basically being a long term and rigid, contract basis, and spot is remaining volume
  - Market integration shall focus on physical transaction ~ no necessity of speculative or financial market

**Benefit: Stabilize energy balance for the region but must start from spot basis**



## Conclusions and Lessons learned



- Stable of supply
  - Balance in volume may stabilize the area's energy security which is mostly welcome by everybody (but not attractive for arbitrage)
- Secured investment
  - Investment may be returned by stable market for long term
  - Partial additional volume may have chance to be traded in the market or to the other market
- Market and LNG chain expansion (Area, Local)
  - This may induce more investment and E&P activities in the area
  - Also technological development and cost down in LNG chain may be expected

**Conclusion: Stable or steady growing market secures investment and energy stability of the region**