Natural gas challenges and drivers for the future

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Betsy Spomer – Senior Vice President, BG Group

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Dragon LNG regasification terminal
UK

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BG Group snapshot

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- A world leader in natural gas
- UK FTSE 15 company
- Circa $60 billion market cap
- Operates in over 20 countries
- Leading LNG position
- Track record of LNG project delivery: Trinidad and Egypt set industry standards




Natural gas challenges and drivers for future

- Global gas market – recent evolution
- Future challenges and opportunities
  - Supply
    - US exports
    - Canada
    - East Africa
  - Markets
    - UK

Strong gas demand growth

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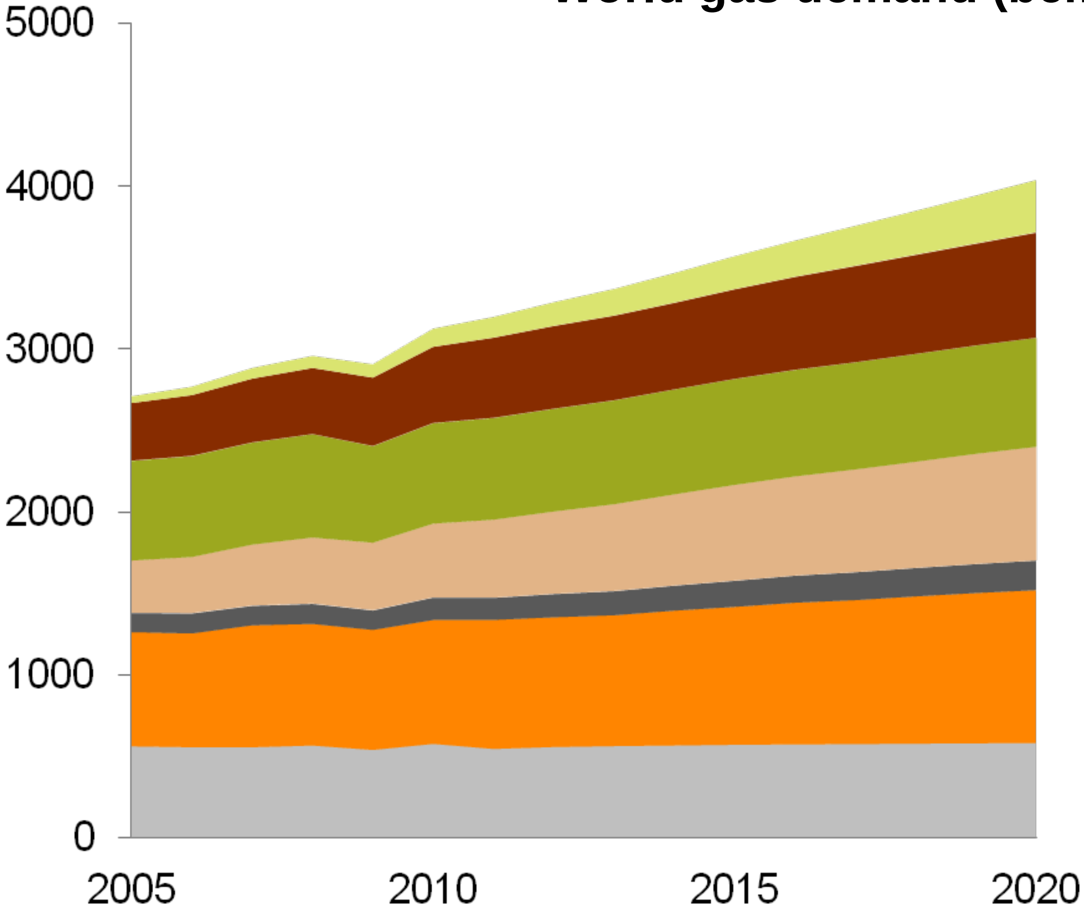
World gas demand (bcma)



	CAGR 2010 – 2020
China	11.2%
Asia (excluding China)	3.3%
Russia and Central Asia	0.8%
Middle East and Africa	4.4%
South America	2.9%
North America	2.1%
Europe	0.1%
TOTAL	**2.6%**

LNG outpacing gas industry growth

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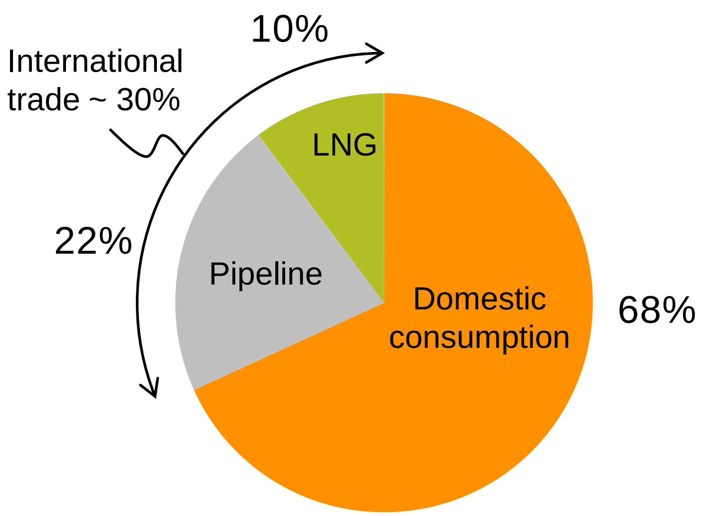
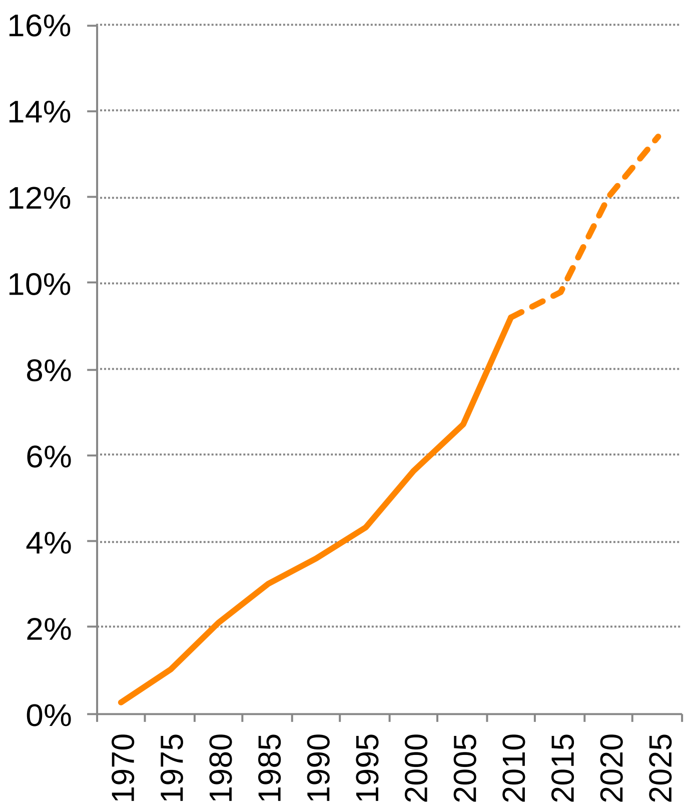
2011 global gas consumption



LNG as a share of global gas



Source: Actuals 1970-2010: CEDIGAZ (2011)
Actuals 2011: BP Statistical Review of World Energy June 2012
Outlook: Wood Mackenzie (2012)

LNG today

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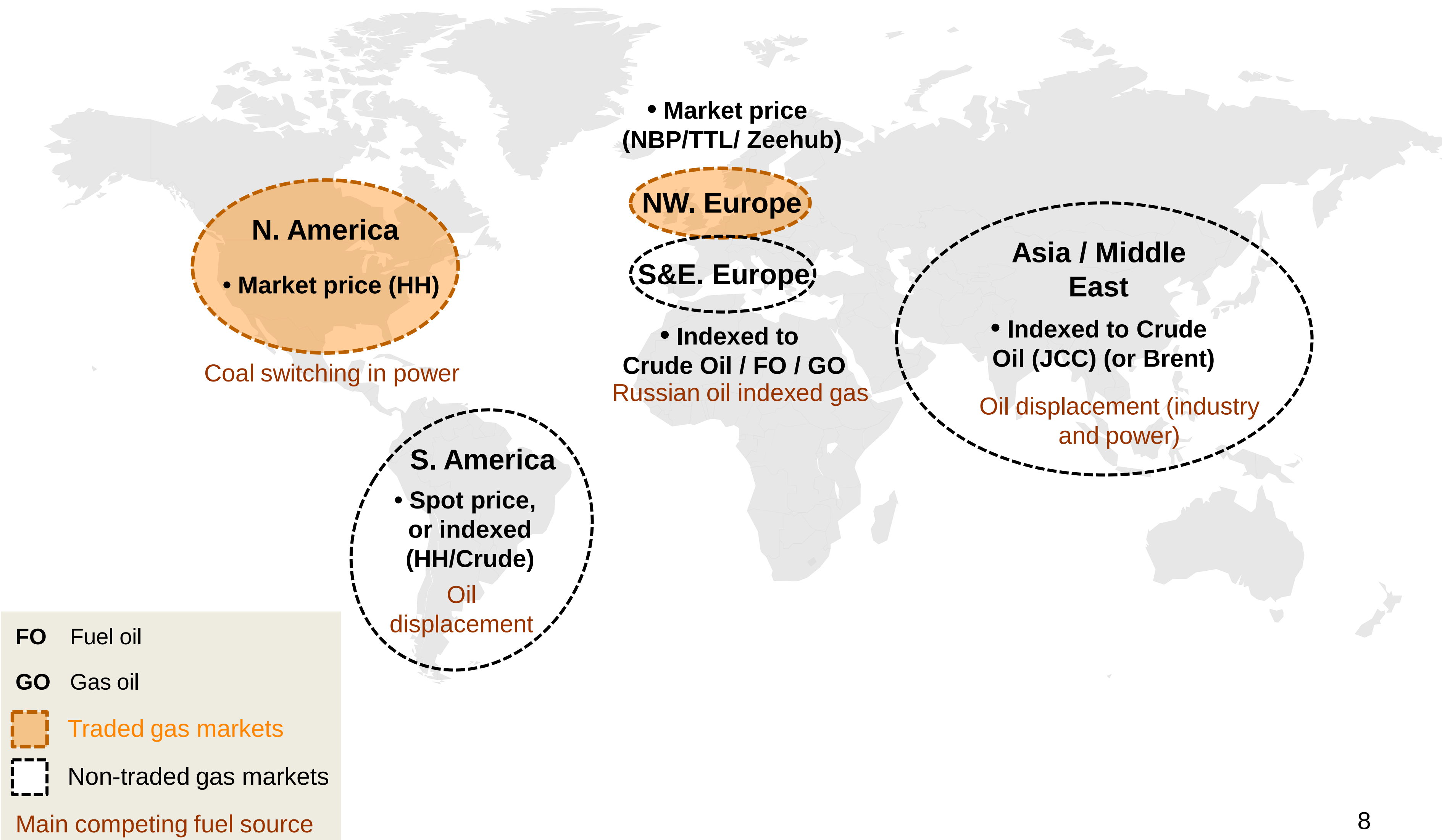
- 2012 trade = ~240 mt*
- A global trade
  - 18 exporters
  - 27 importers
  - ~365 ships
- An increasing dynamism;
  - Short-term trade** = 25% of total (2011)
  - AB to PB = ~22.4 mt* (2012)

But still far from commoditized

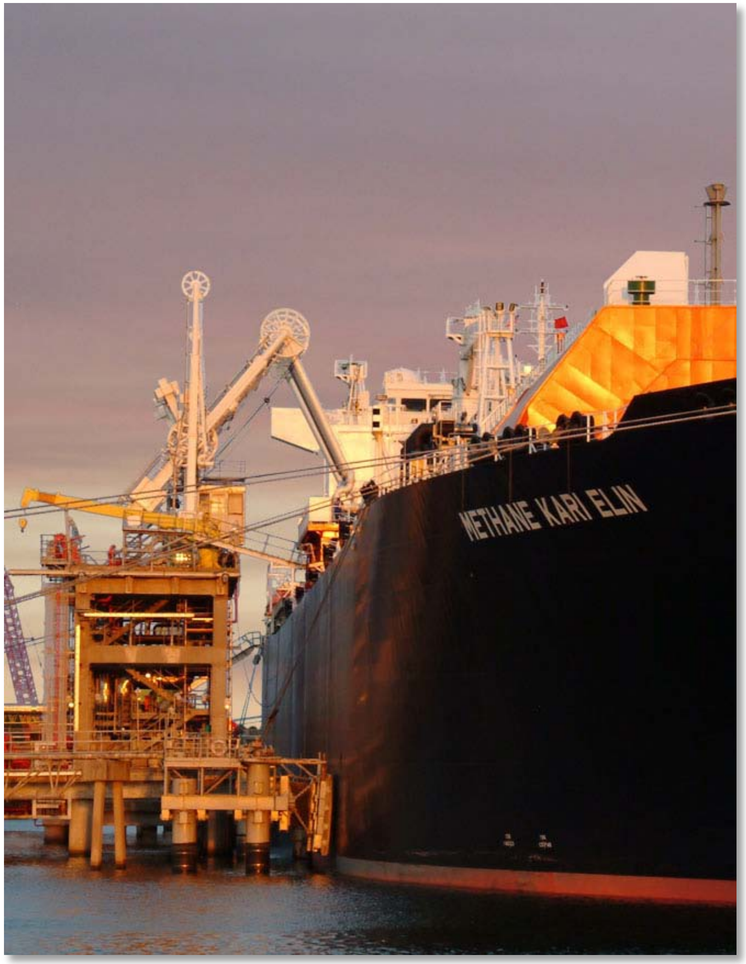
*Source: BG Group estimate based on Waterborne Energy data, **Source GIIGNL – contracts of less than 5 years
Note: AB = Atlantic Basin, PB = Pacific Basin

Gas pricing mechanisms by region



Industry context

- Three paradigm shifts:
  - Crude oil price
    - 2001 = $ 20 / bbl (Brent)
    - 2012 = $112 / bbl (Brent)
  - US shale gas
    - 2003* = US as LNG importer
    - 2012 = US as LNG exporter
  - Fukushima
    - +17 mtpa since 2010
    - Future of nuclear power?



Crude oil = ICE Brent
* Alan Greenspan testimony, June 10, 2003

Global price divergence

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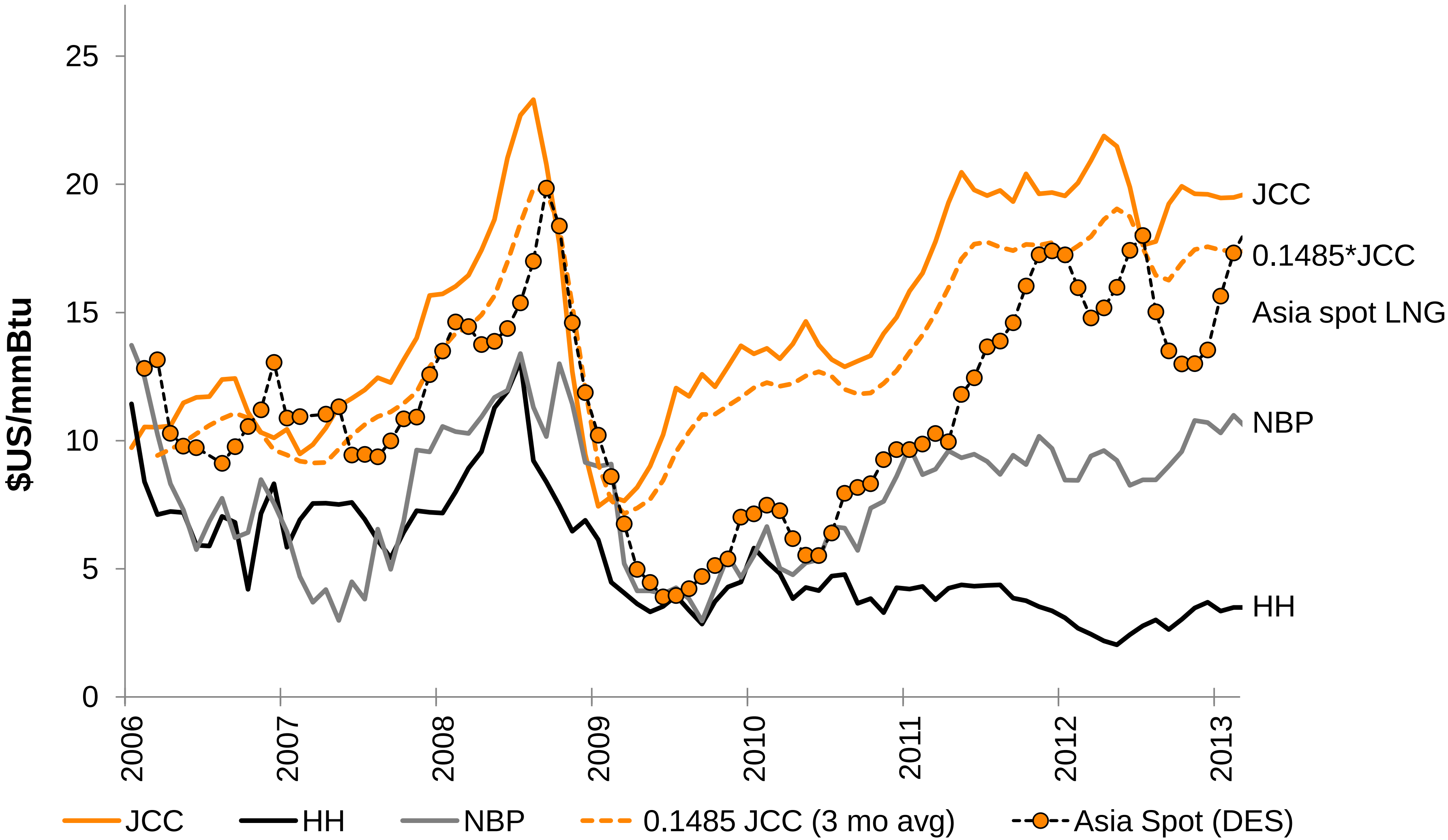

Source: Platts, Heren, Petroleum Association of Japan and Bloomberg

Challenges and opportunities

Dragon LNG regasification terminal
UK

Global gas supply challenge (2010-20)

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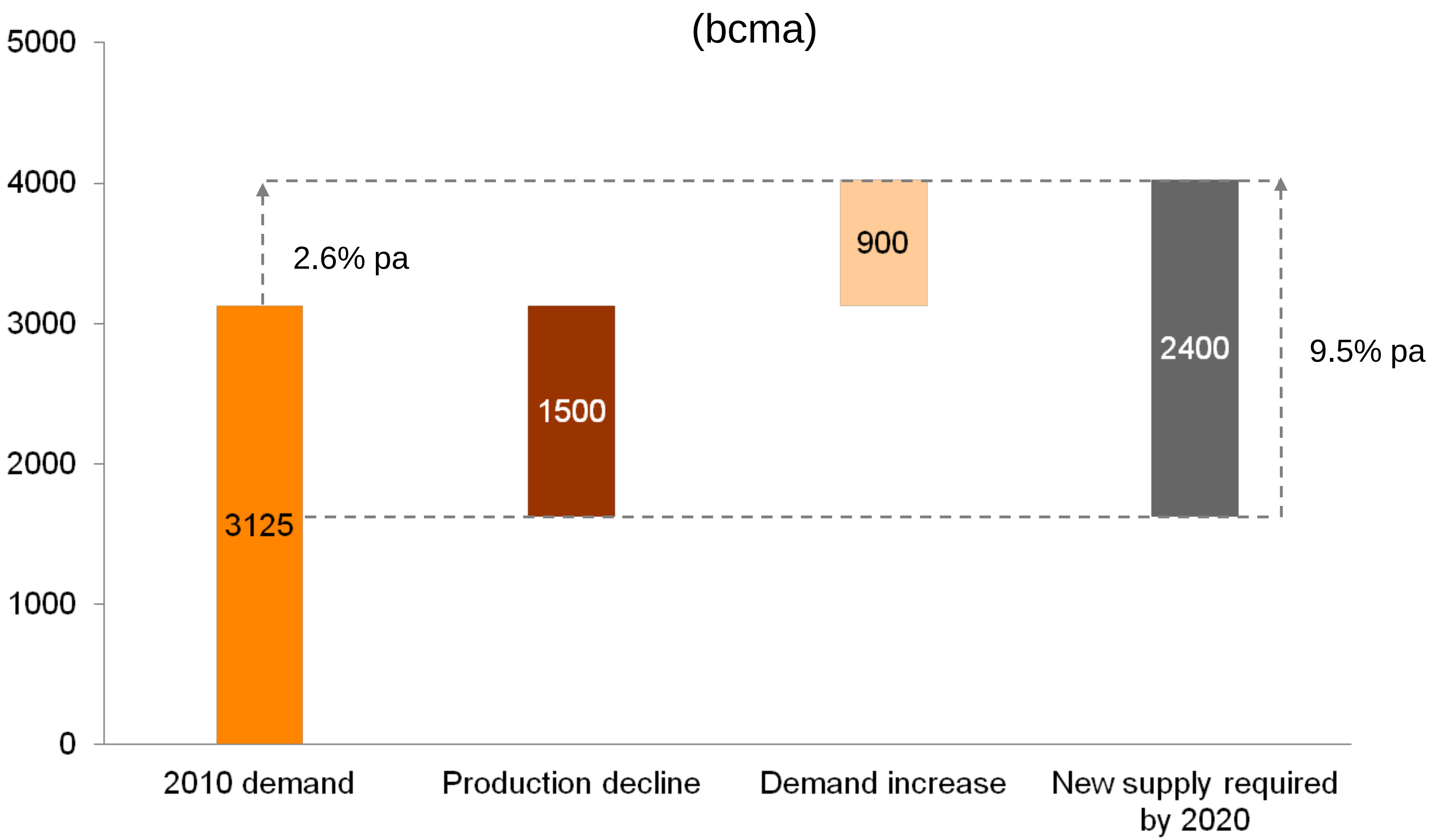

Sources: BG Group, BG Group interpretation of Wood Mackenzie

LNG importing markets

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Source: BG Group (January 2013)

Asian LNG imports (2000 to 2025)

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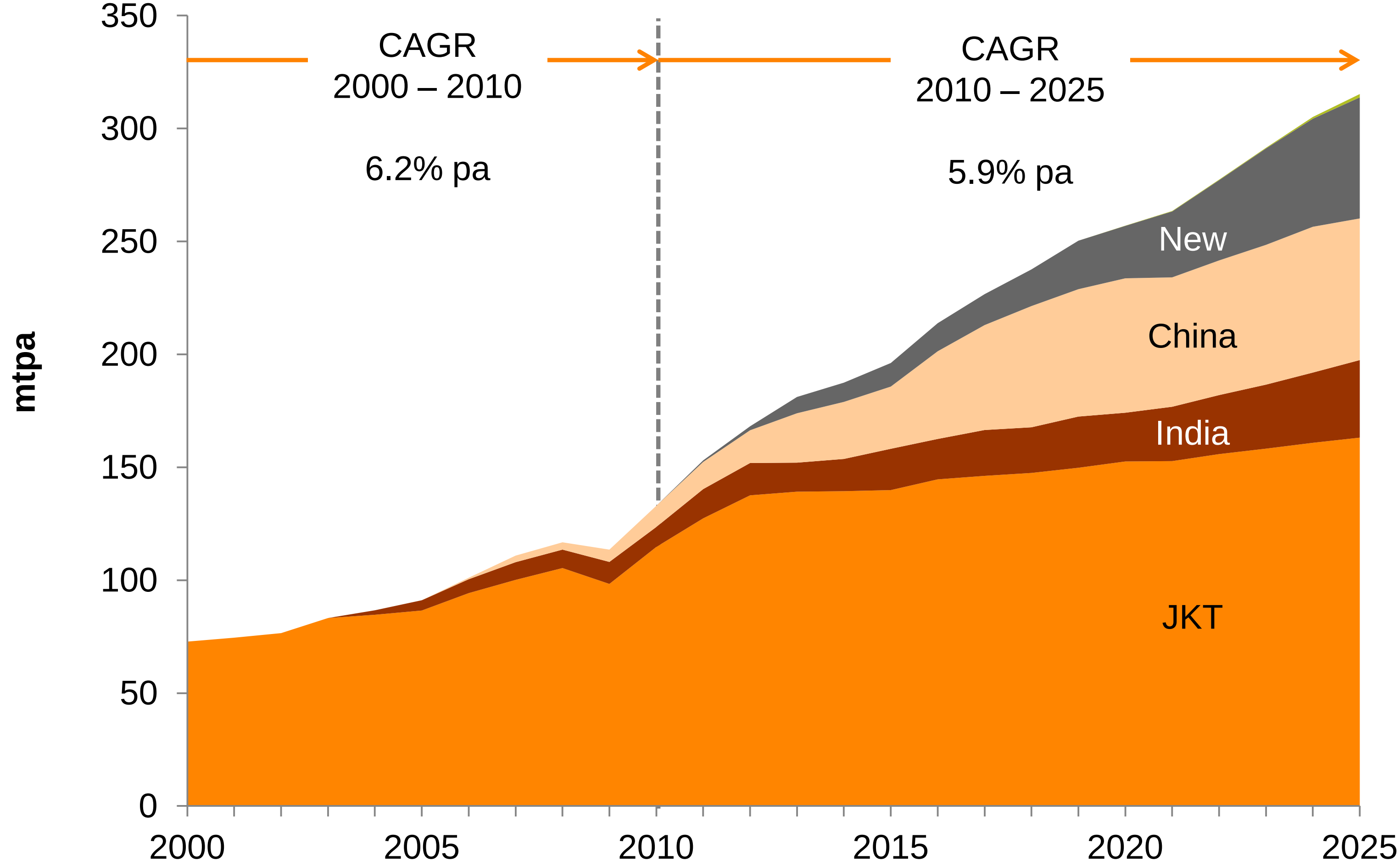
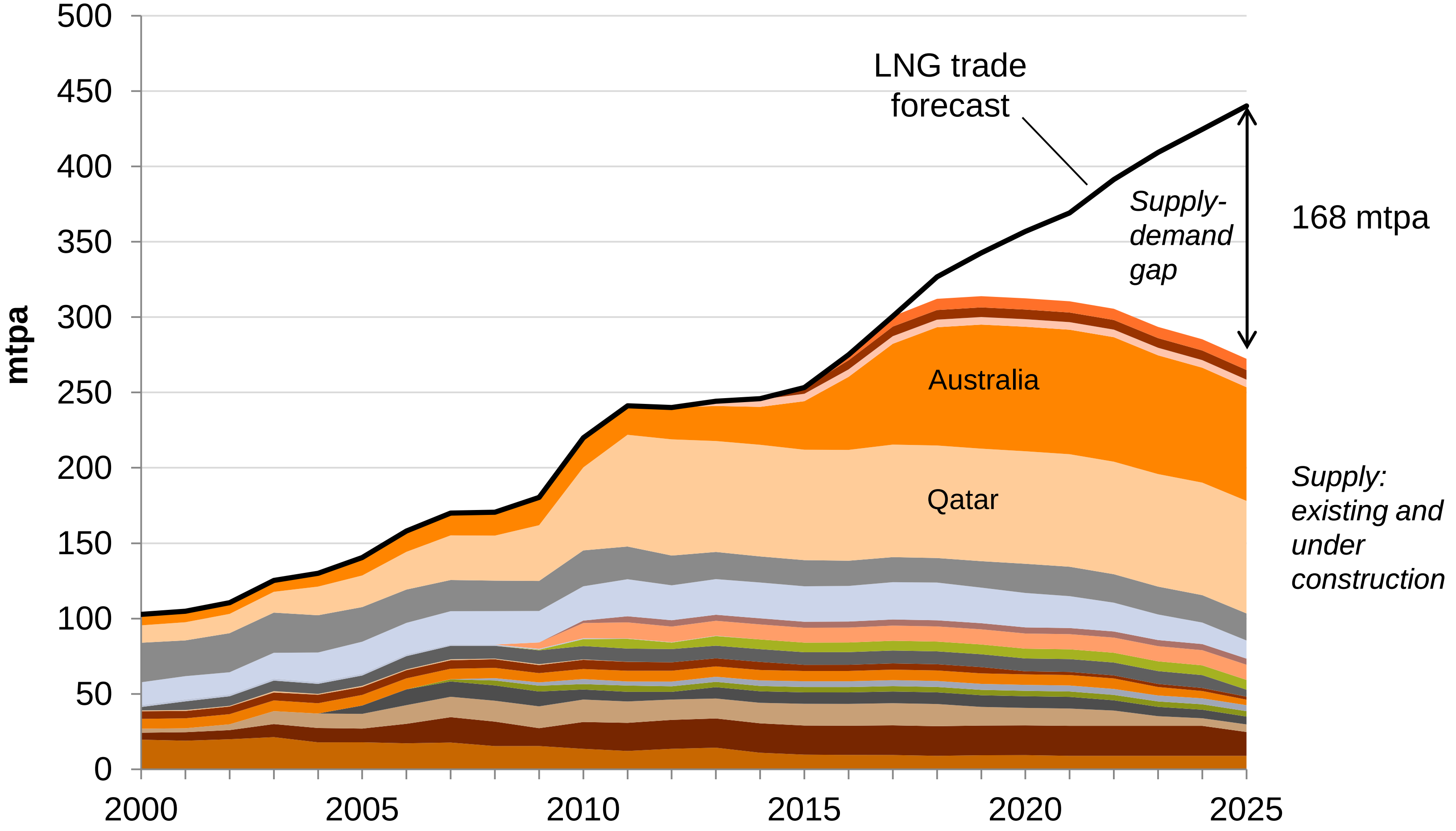


Source: BG Group interpretation of Wood Mackenzie data (Nov 2012)

The LNG supply challenge



Source: BG Group interpretation of Wood Mackenzie data (Nov 2012)

A rapidly changing supply perspective

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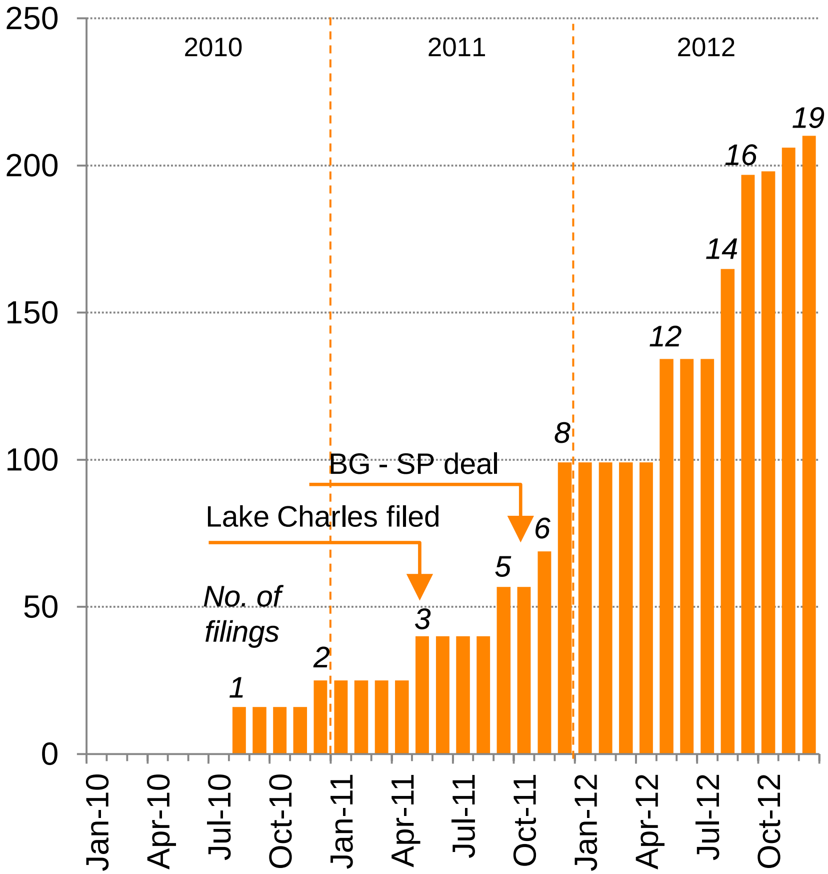
US LNG exports

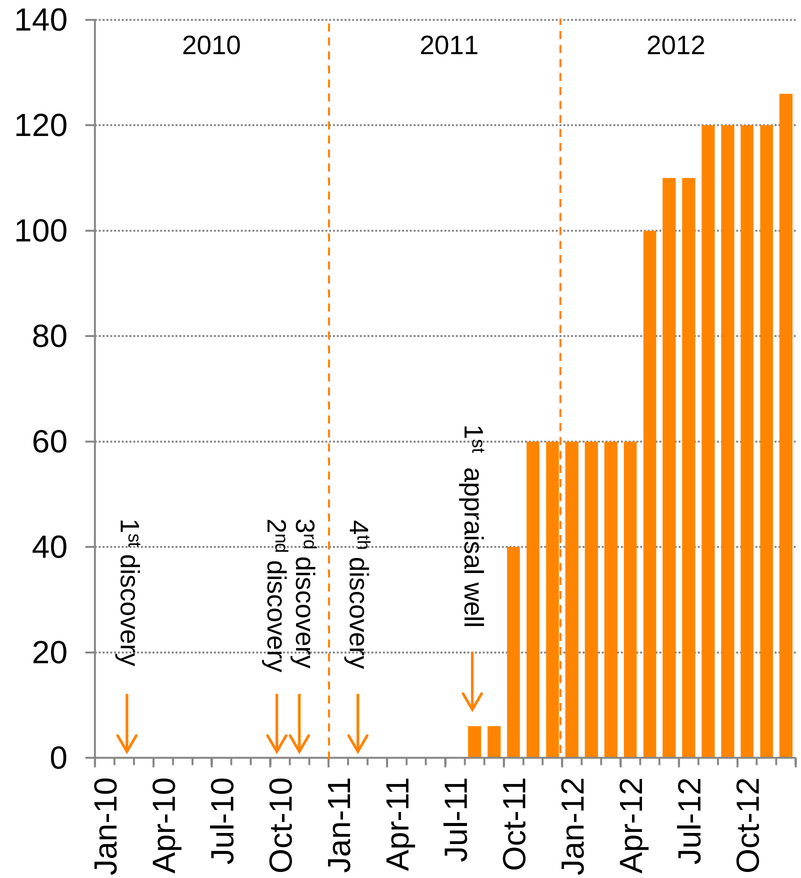
Cumulative DOE filings (mtpa)



Source: DOE, Press / ENI + Anadarko websites
Note: Excludes applications for under 0.1 bcf/d

Mozambique

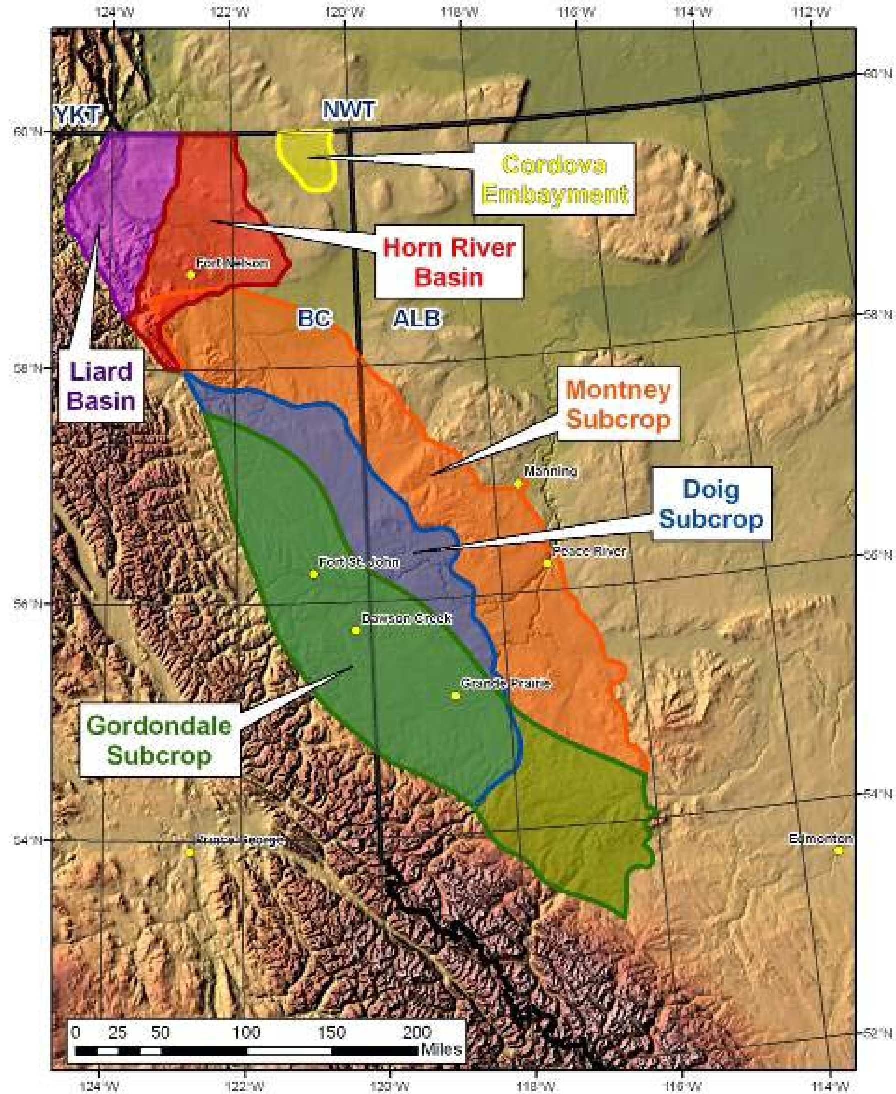
Reserves announced* (tcf)



* Recoverable – Anadarko, Reserves in place – ENI

Western Canada shale gas basins

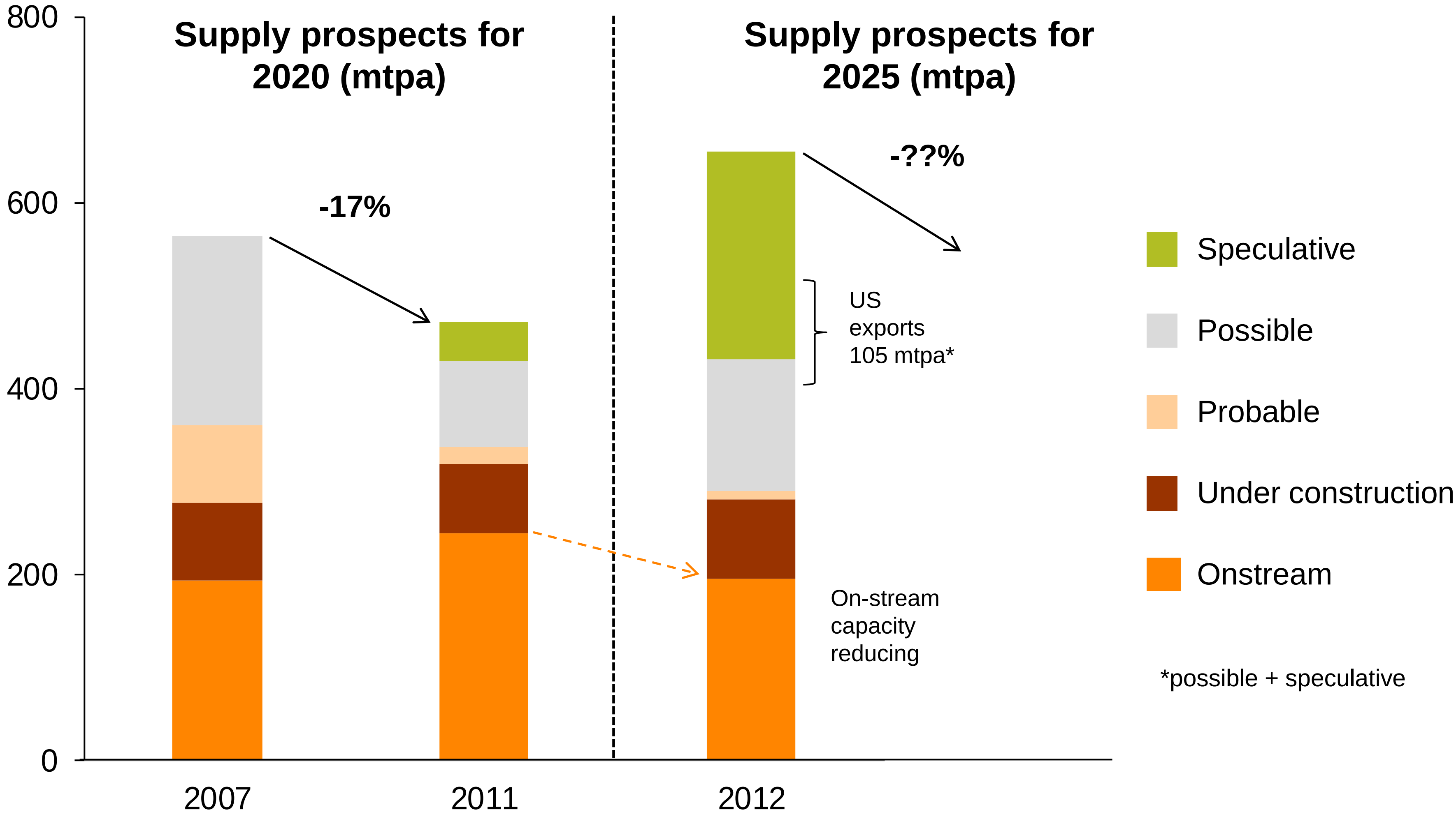
- Canada has large undeveloped shale gas resource base
- Shales make up largest portion (38%) of rock volume in WCSB
- The resource (gas in place) is massive, over 1,200 Tcf
- Much of this is stranded at current prices
- Well developed pipeline and services availability
- Numerous companies, including BG, Shell, CVX and XOM, have entered
- Favorable fiscal regime, moderate work commitments, long terms



Source: ARI / EIA (2011)

Canada LNG exports – geography

Long-term supply challenges



Source: Wood Mackenzie - LNG Service and Tool (Nov 2012)

Supply observations

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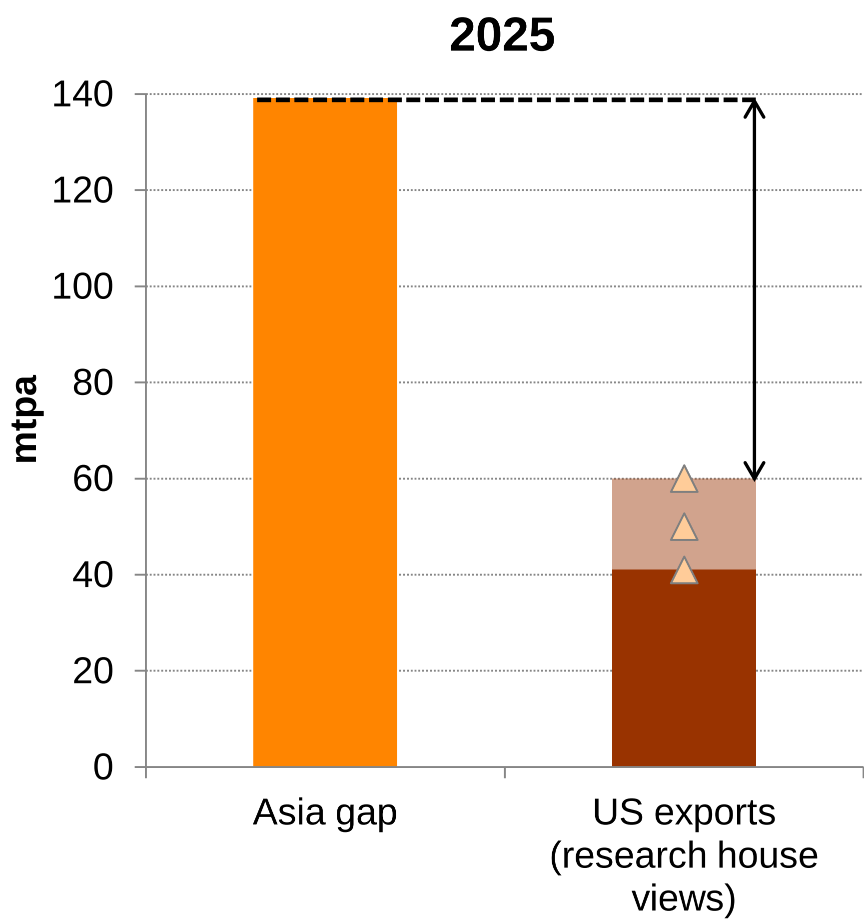
- US exports
  - Volume will be project and market limited – irrespective of Govt. policy
  - Policy delays will act to extend current market tightness
- Western Canada
  - Traditional resource play – very different from US
  - Pipeline route and plant site are key
- East Africa
  - Frontier play
  - Stakeholder alignment key

Asia LNG demand gap vs. US exports

- Asia supply-demand gap ~140 mt by 2025
- Research house views suggest 40 to 60 mtpa US exports credible by 2025
- Additional ‘conventional’ supply also needed



Source: BG Group interpretation of Wood Mackenzie data (Nov 2012), Poten and Partners, and FACTS (2012)
Note: Asia gap = Asian demand minus supply from Pacific Basin and contracted supply from the Middle East

Liquefaction costs

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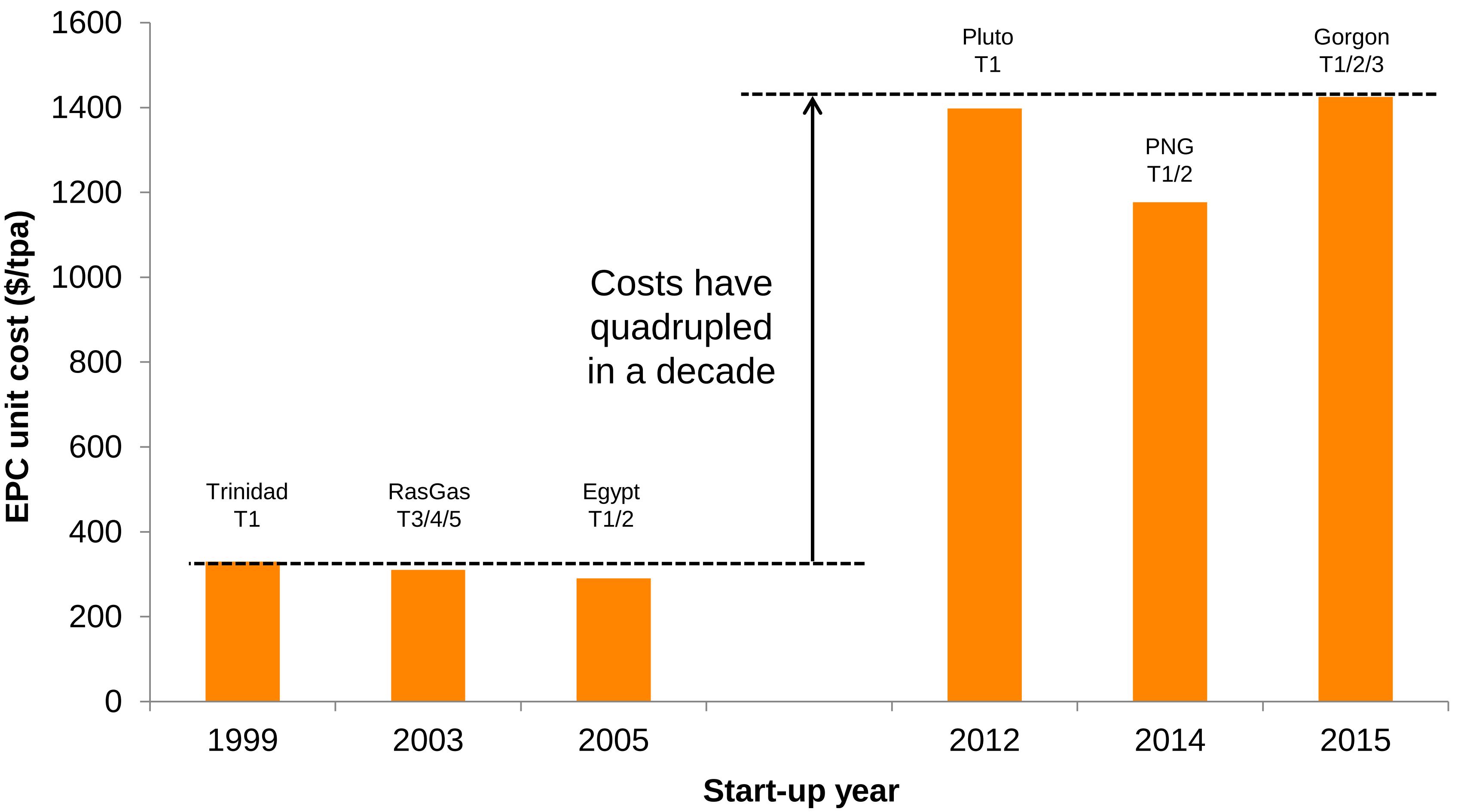
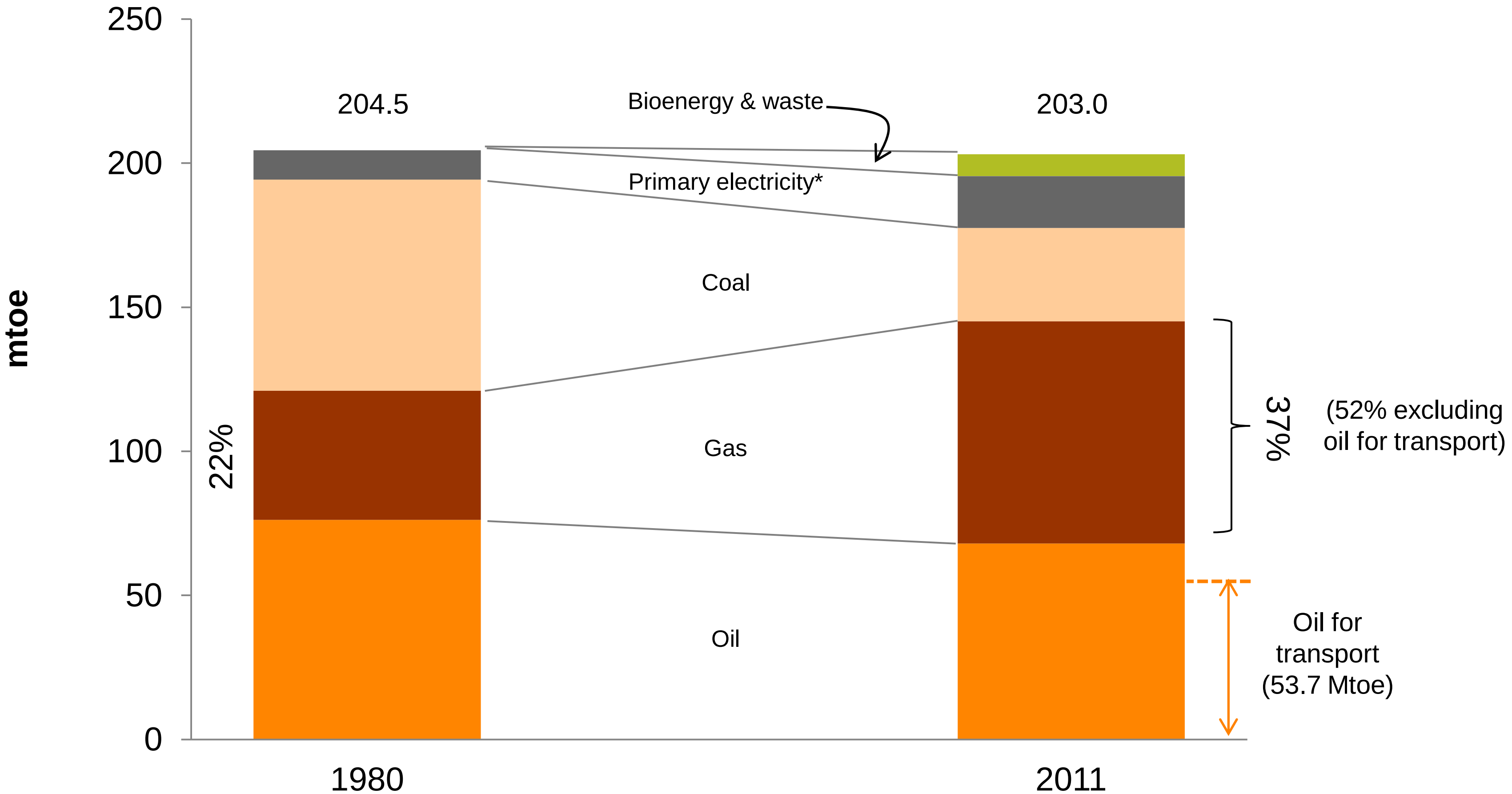


Source: Poten and Partners, BG's interpretation of various news articles

UK energy consumption (1980 / 2011)



Source: DECC – UK Energy In Brief 2012

Note: energy consumption = inland energy consumption including conversion and distribution losses

* mainly nuclear

UK trade in natural gas

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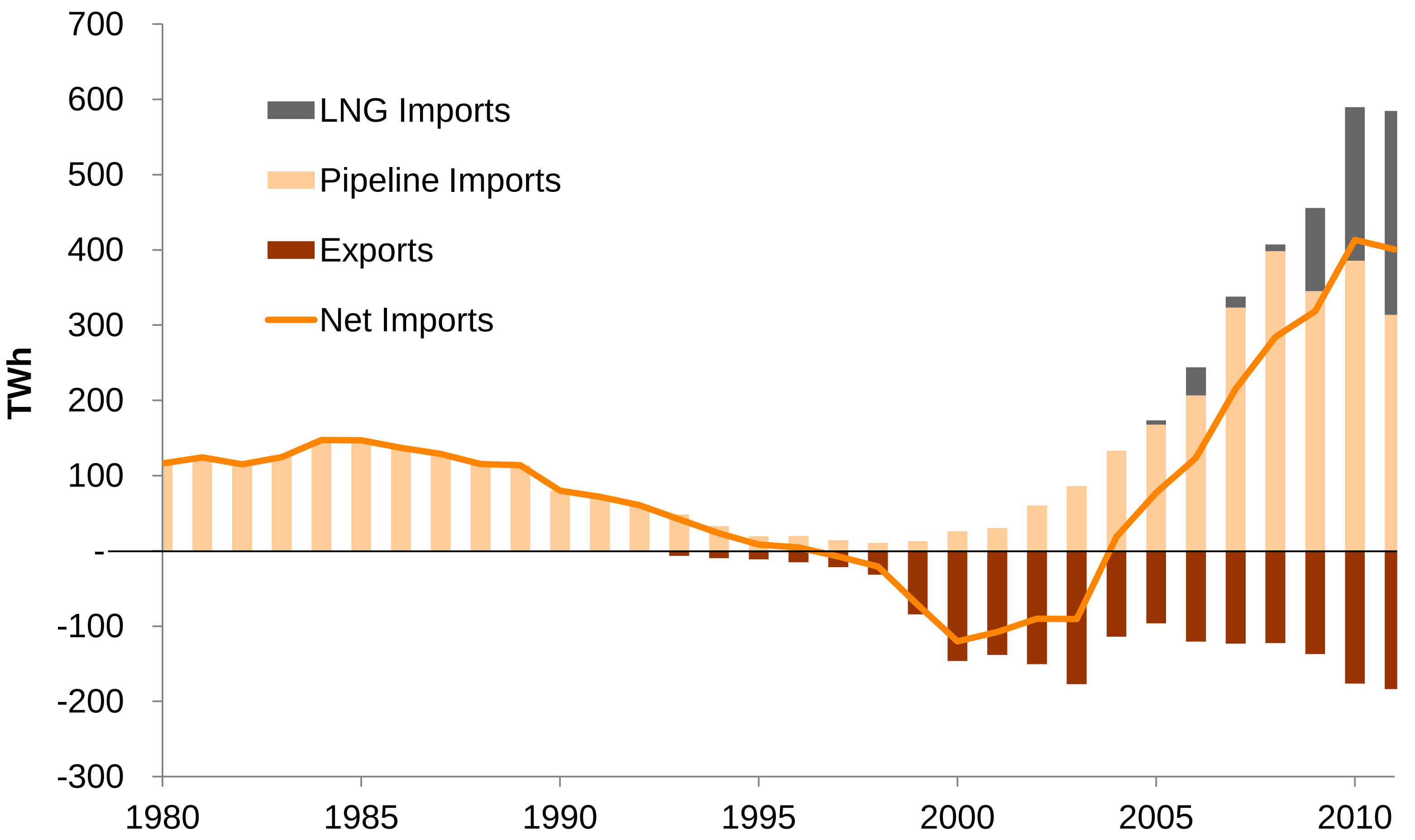

Source: DECC – UK Energy In Brief 2012

The UK and LNG

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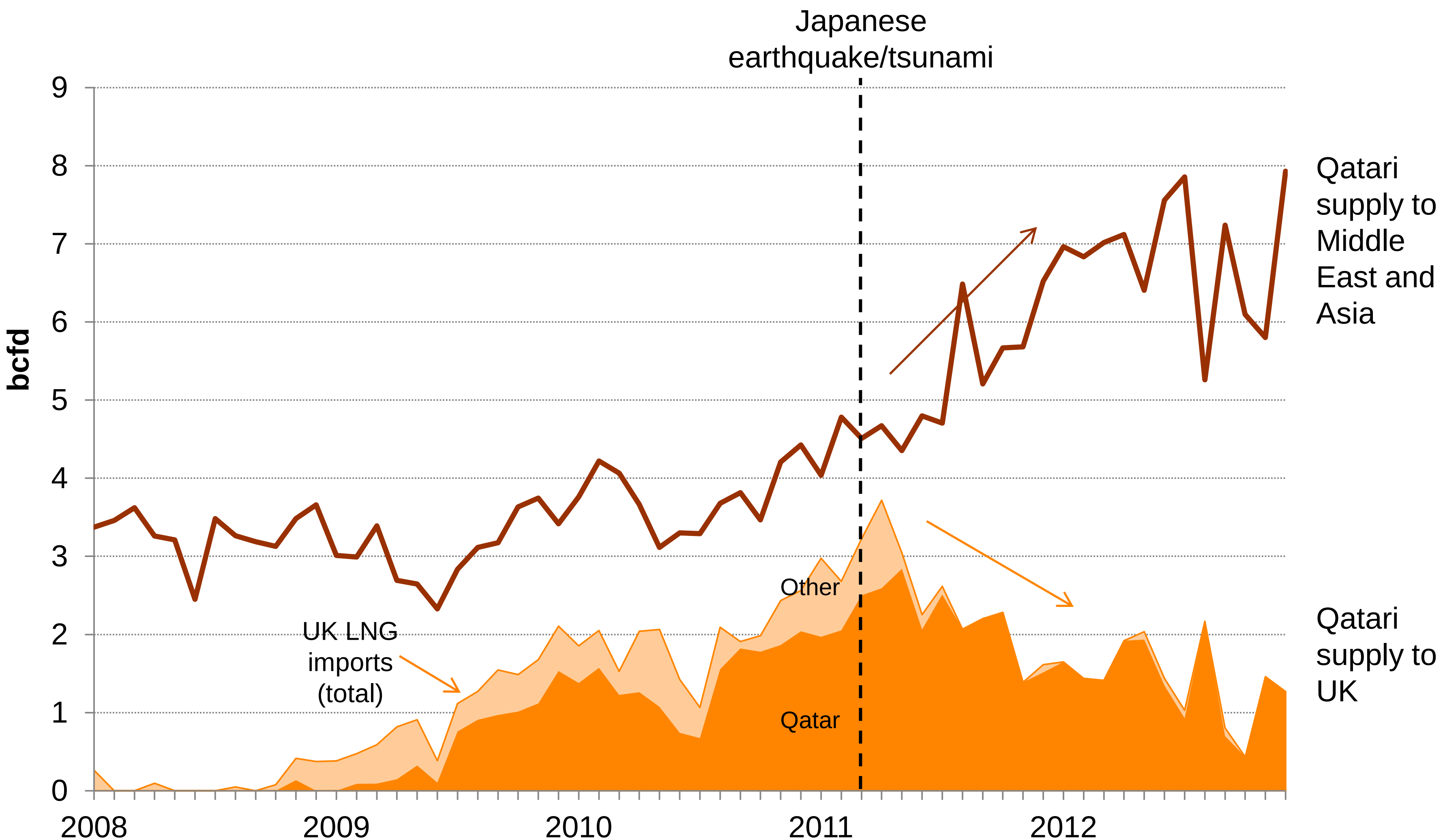
- Imported ~10.5 mt in 2012
- Seventh largest market (third in 2011)
- Four import terminals, 38 mtpa total capacity
- Liquid and transparent hub market – global swing market for LNG
- LNG flows to UK will be influenced by:
  - Short-term factors (*days – months*): weather, supply outages
  - Longer-term industry cycles (*months – years*): supply build, demand factors
  - Other: Qatari business model

UK as a global balancing market



Source: BG Group interpretation of Waterborne data (December 2012)

Conclusions

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- LNG has driven globalisation of the natural gas trade
- LNG flexibility increasing – but trade far from commoditized
- Looking forward supply is the key challenge
- New opportunities emerging – but still early days:
  - US exports
  - Canada
  - East Africa
- Rising costs remain a concern – see Australia
- Markets have also been impacted by globalisation of gas trade – see UK

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