

Capital for Gas - Meeting the Challenges

David Morrison
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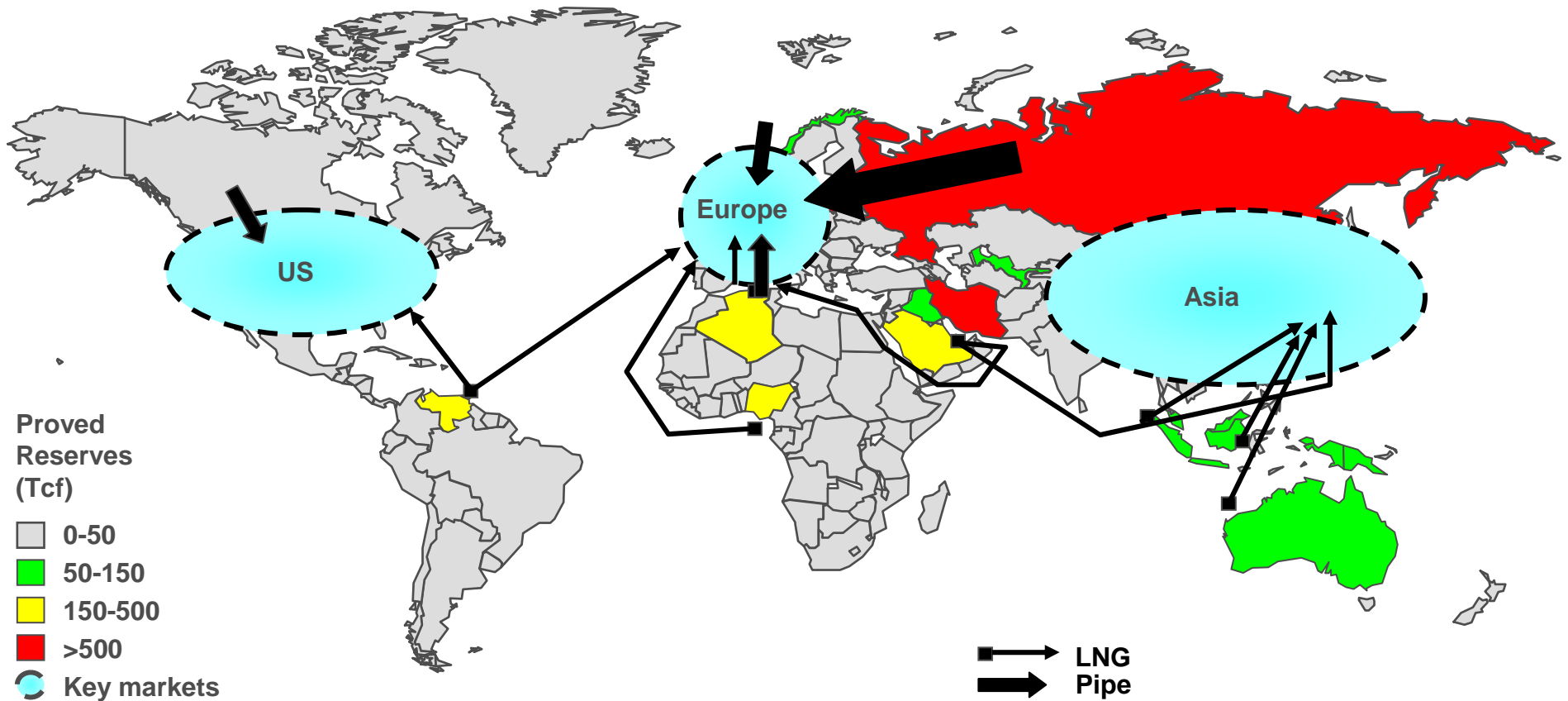
Gas demand has been growing rapidly

- › Overall energy demand continues to rise
- › Gas has increased its market share, particularly in generation
- › Gas usage has been helped by environmental concerns

- › But high prices recently have had an effect
 - Industrial feedstock
 - Decisions on new-build generation (eg US)

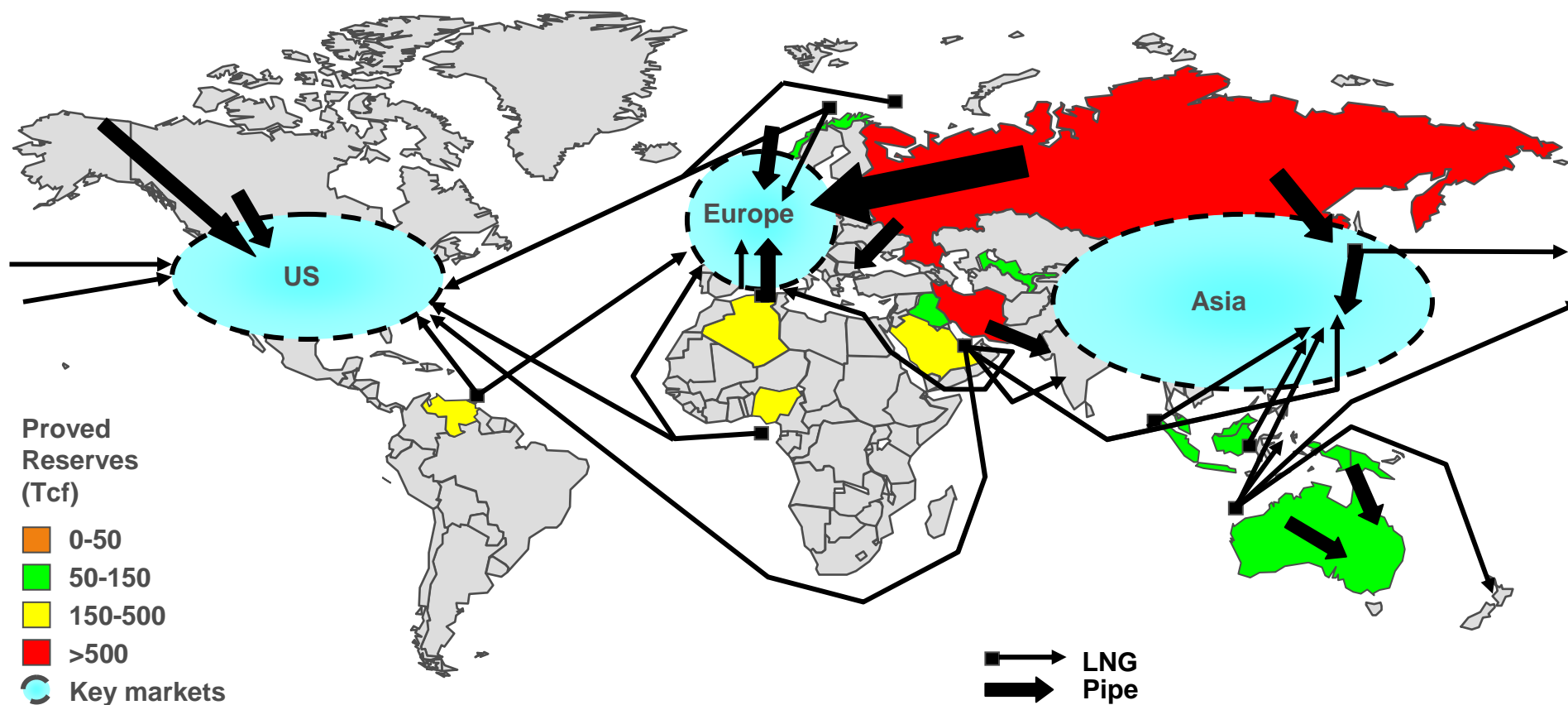
- › And there are new questions about security of supply
 - Russian disruption
 - National agendas and protectionism appearing

Historically gas flows were dominated by geography...



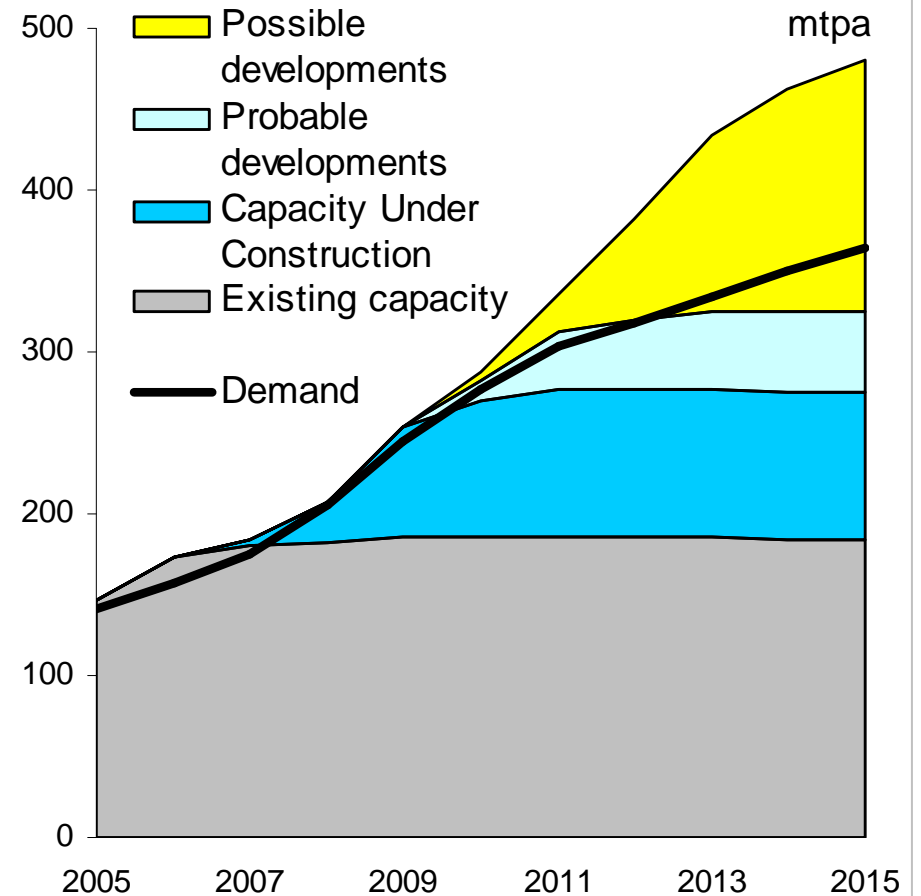
Source: Wood Mackenzie Energy Markets Services

...but looking to future gas trade flows, a global dynamic emerges



There are many potential issues associated with LNG supply

- › **Continuing short-term issues**
- › **Development of probable and possible LNG projects potentially adversely impacted by a range of factors including:**
 - Moratoria on new projects (eg Egypt and Qatar)
 - Requirement for additional exploration (eg Libya)
 - Technical challenges (eg Shtokman)
 - Unclear Government position on exports (Indonesia, Peru, Venezuela)
 - Construction and contractor capacity
- › **These issues and factors are expected to keep the supply/demand balance tighter than the chart potentially indicates**



In addition to LNG, we will see major new pipelines built too

	Capacity bcm/a	Cost \$bn (2005)	Start
<u>Europe</u>			
Medgaz (Algeria to Spain)	8	1	2009
NEGP (Russia to Germany)	28	5	2012
IGI (Greece to Italy)	8	1	2010
Nabucco (Turkey to Austria)	25	5	2011
GALSI (Algeria to Italy via Sardinia)	10	2	>2012
<u>North America</u>			
Mackenzie Delta (Canada to US)	12	5	2010-12
Alaska to US Lower 48	45	15+	2015-17?
<u>Asia</u>			
PNG Gas (PNG to Australia)	4	2	2011-12
Kovytko (Russia) to China	~30	6	>2010
Iran to Pakistan and India	30-40	8	>201

There will be challenges

› Access to reserves

- There are large gas reserves in 'difficult' countries where a national oil company or equivalent dominates
- Some of the big gas resource holders either discourage IOC involvement or offer marginal returns
- Industry manpower and construction capacity could be bottlenecks

› Access to market

- There is still no 'right' answer about where to position in the value chain

› Access to capital

- Significant investment will be needed to add gas production and transportation capacity

› Access to understanding

- Gas sales in the medium term are likely to remain contract-driven, but a more complex global market longer term could force all players to develop a deeper understanding of its drivers

Conclusions

- › **There is plenty of gas**
- › **Getting it to markets involve many challenges**
 - Physical
 - Political
 - Financial
- › **Gas markets will become increasingly inter-connected...**
 - ...bringing greater complexity...
 - ...but also greater security of supply
- › **As major gas markets become more import dependent, policy makers are likely to encourage greater diversification of gas supplies - and of energy sources in general**

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Wood Mackenzie Head Office

Kintore House
74-77 Queen Street
Edinburgh EH2 4NS

Global Offices

Beijing - Boston - Dubai - Edinburgh - Houston - Kuala Lumpur - London - Moscow - New Jersey - New York - Singapore - Sydney - Tokyo

Global Contact Details

Europe	+44 (0)131 243 4400
Americas	+1 713 470 1600
Asia Pacific	+65 6549 7107
Email	energy@woodmac.com

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