



2013 - The Natural Gas Year in Review

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Medium-term dynamics of gas markets

Global Gas Activity in 2013

- Sharp slowdown in the growth of dry production (+ 0.8%)
- US production recorded its lowest annual growth since 2005
- Africa's production collapsed amid a turbulent economic, political and security climate
- Largest production gains in the CIS (+ 2.7%) and the Middle East (+ 3.4%). Production decline in Europe.
- Actual gas consumption increased only 1.3%
- Fukushima impact on Japan's LNG demand was less relevant
- International gas trade up 2.1%, driven by inter-regional pipeline flows from the CIS to Europe and China
- Trade by LNG tankers stagnated on supply constraints in many LNG producing countries
- The European market saw dependence on Russia surging to the detriment of all other supply sources

Supply and demand drivers

DEMAND-SIDE FACTORS

- Severe competition between natural gas, coal (US, Asia-Pacific, Europe...) and renewables (Europe)
- Nuclear malaise and uncertainties in OECD Asia
- Cost effectiveness of gas relative to oil
- Growing role of gas in power generation and industry in emerging markets (China, Middle East)
- Natural gas for heating purposes (OECD)

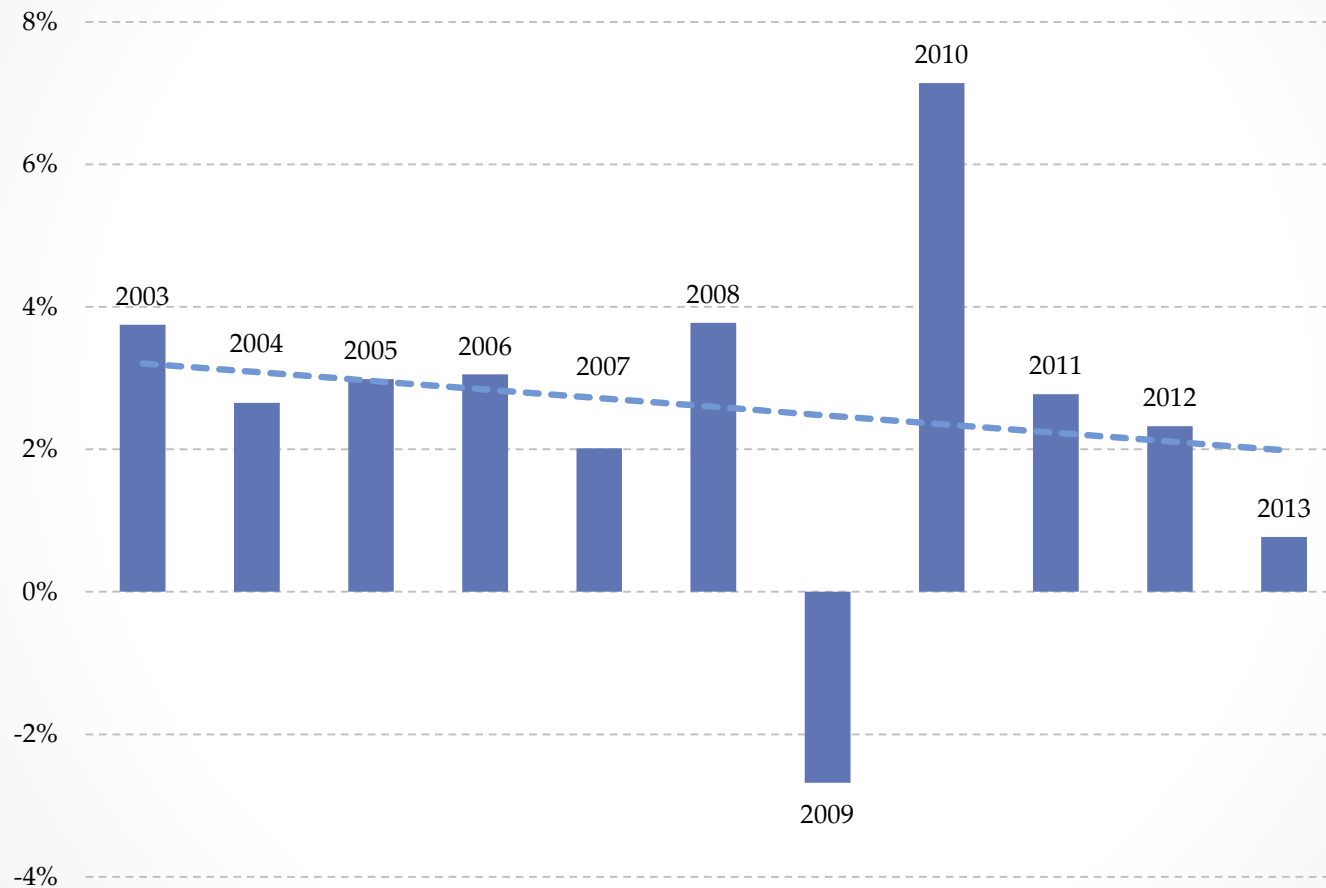
SUPPLY-SIDE FACTORS

- Growing importance of geopolitical risks (MENA region)
- Deterioration of security and damages to infrastructures (force majeure in Libya, Nigeria, Algeria...)
- Growing gas shortage reflecting a lack of upstream investment (Egypt, Southeast Asia, Middle East, Latin America)
- Delays in new projects (LNG)
- Unplanned maintenance and technical problems (Norway, Angola)

2013 was a year which demonstrated the challenges faced in developing new supply to meet growing demand (emerging markets)

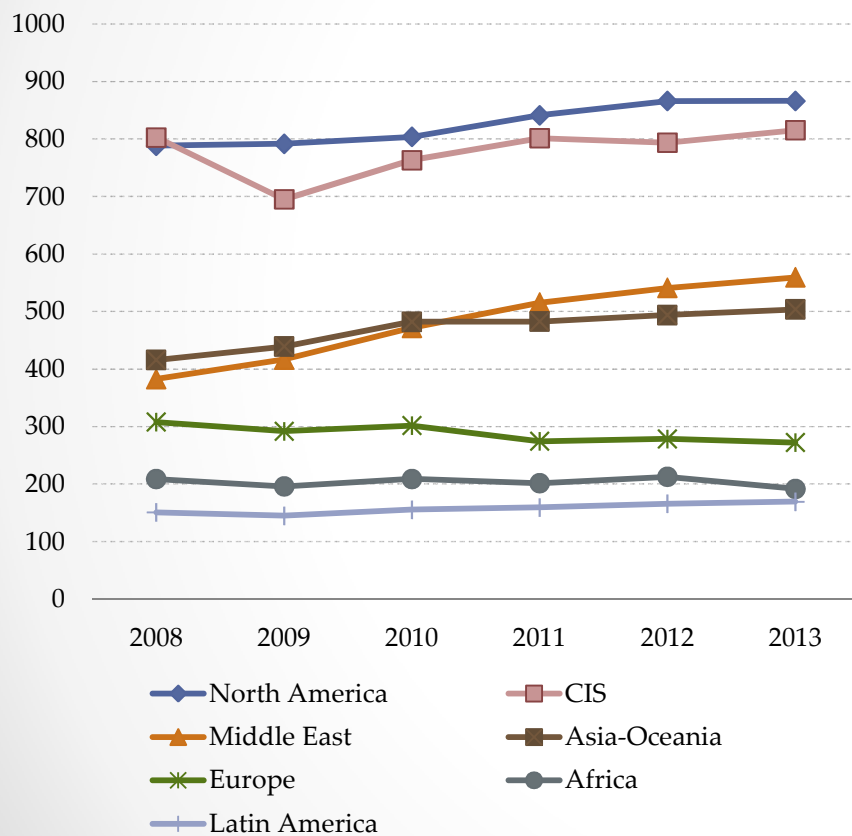
Global downward trend in gas supply

Evolution of world gas supply: growth rate (%/year)

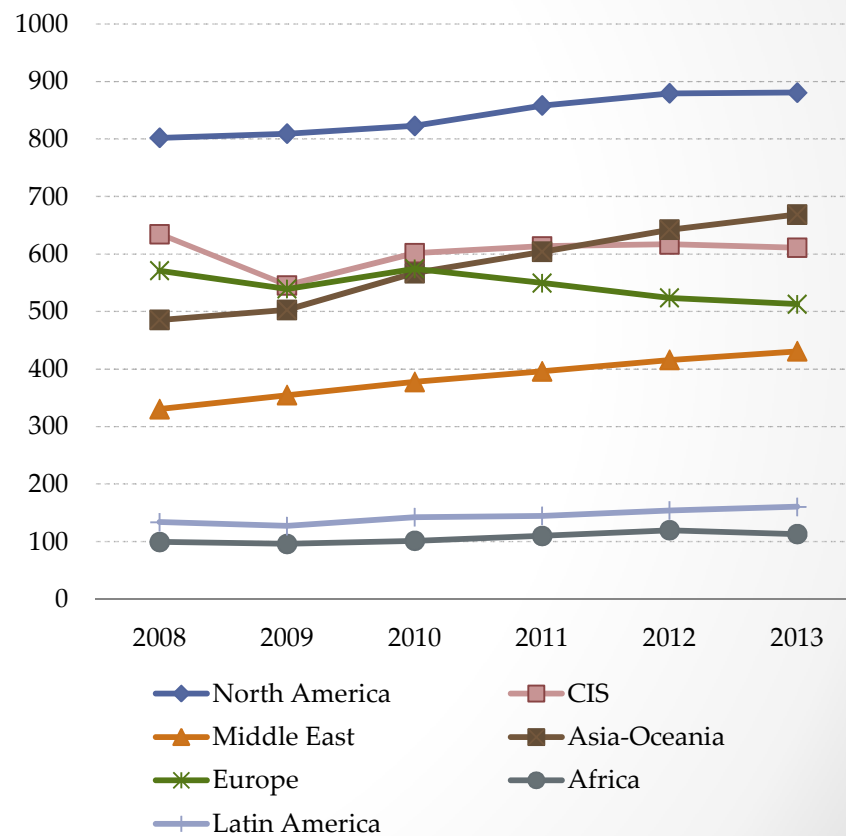


Growing regional imbalances

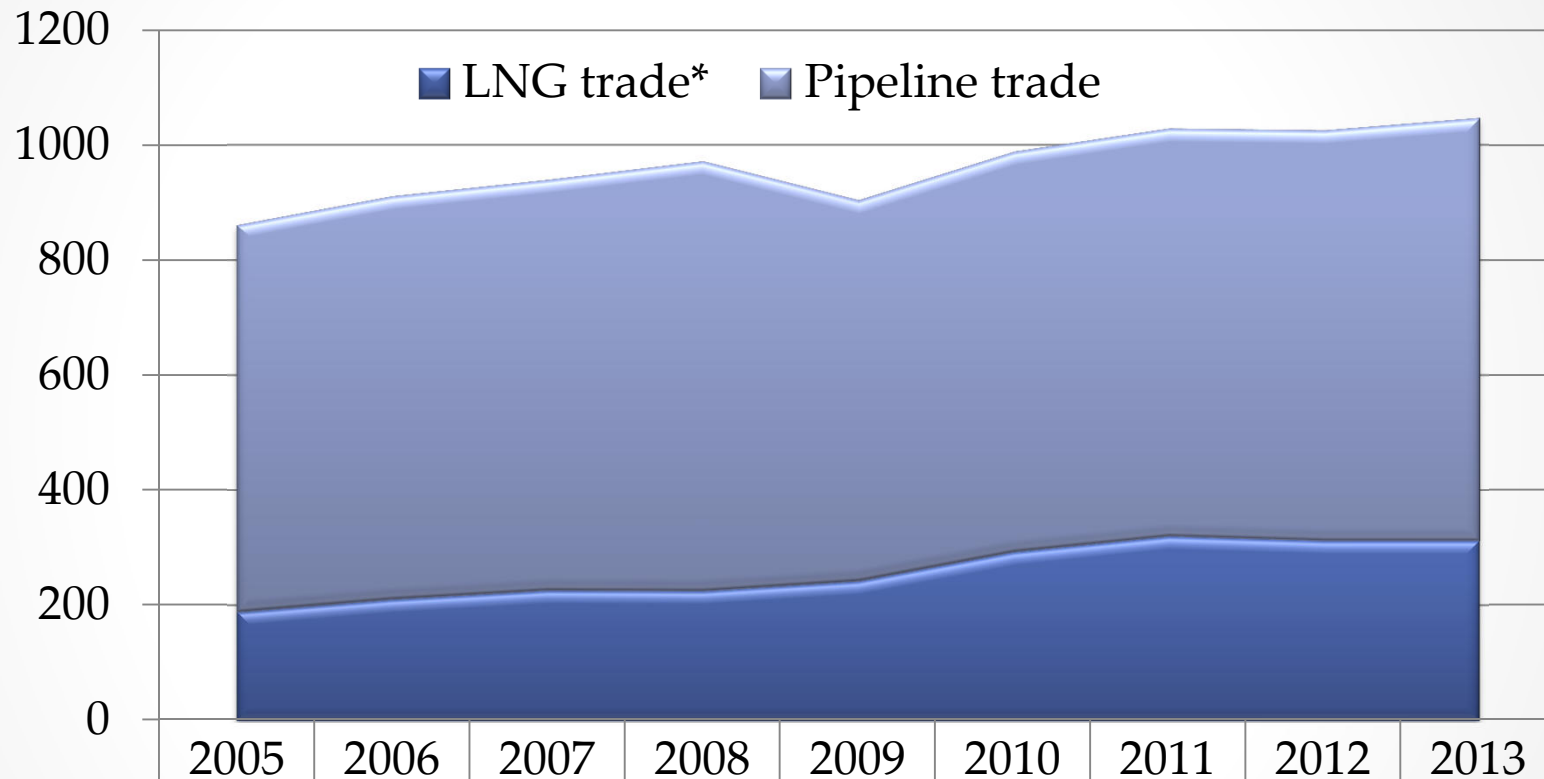
Production by region



Consumption by region



Evolution of international gas trade

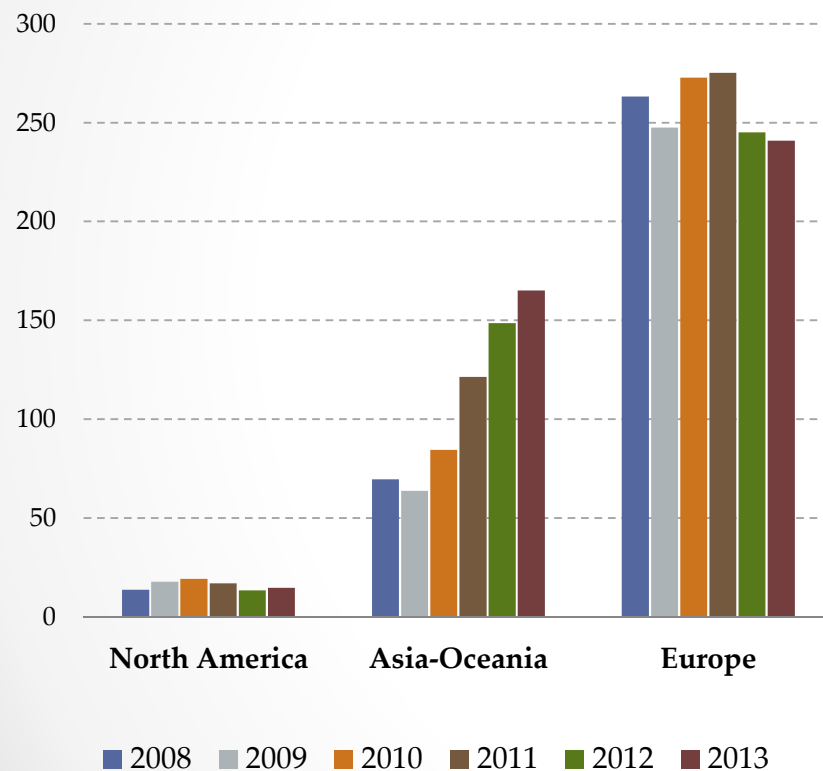


Pipeline trade	673	701	714	747	662	695	708	713	735
LNG trade*	189	211	227	226	243	294	321	313	313

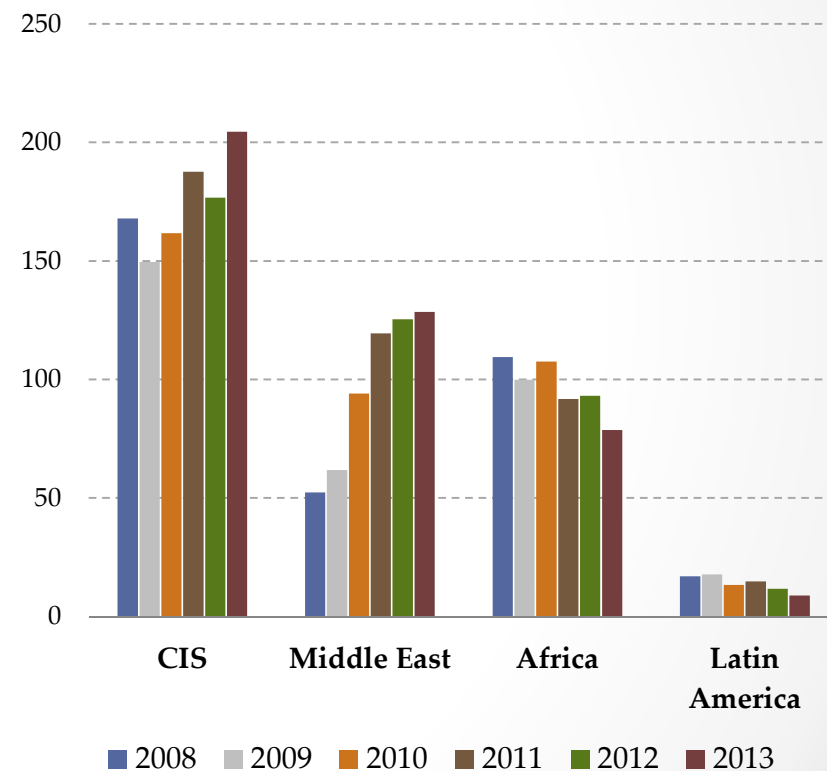
* Excluding re-exports

Evolution of inter-regional trade

Net imports



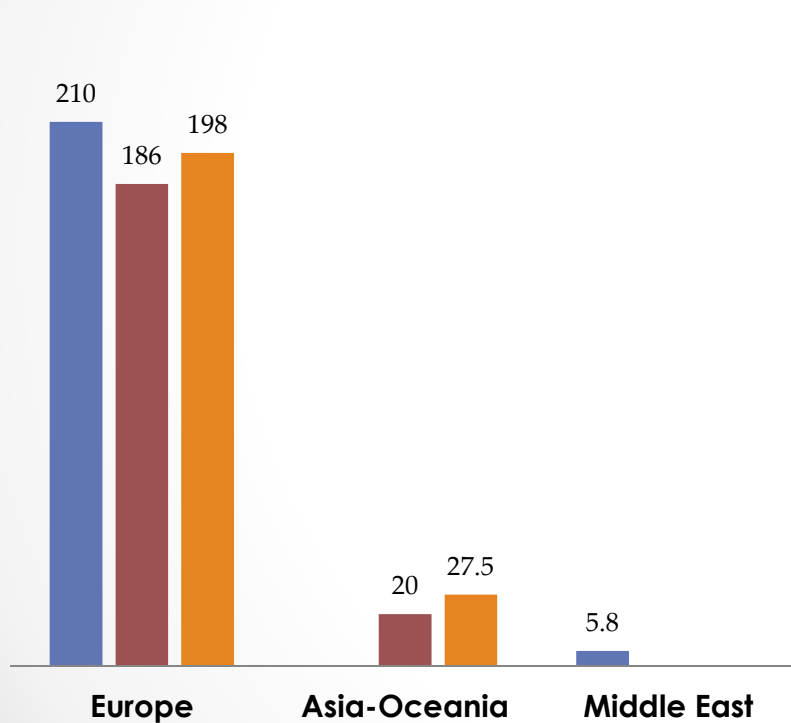
Net exports



Inter-regional pipeline trade

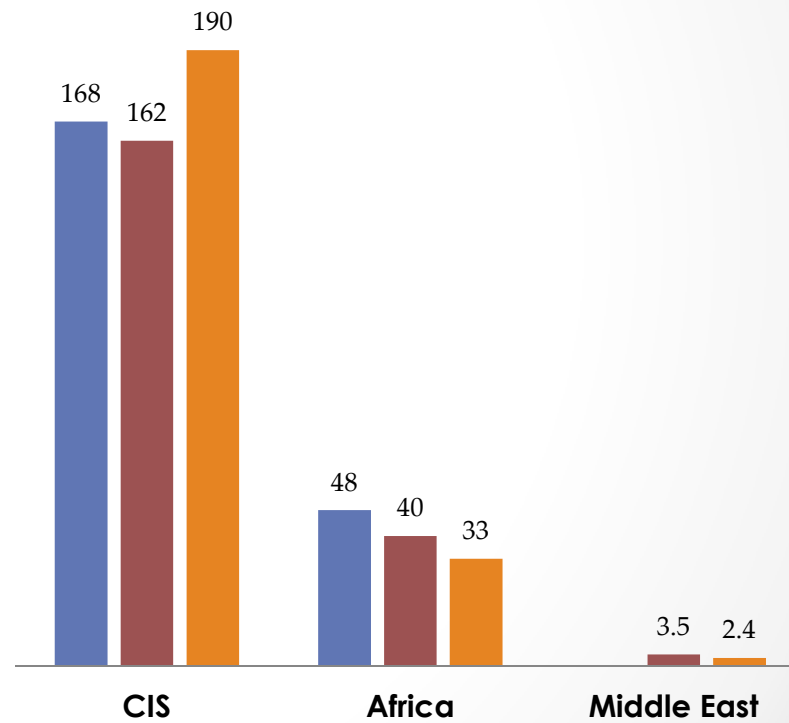
Net imports

■ 2008 ■ 2012 ■ 2013



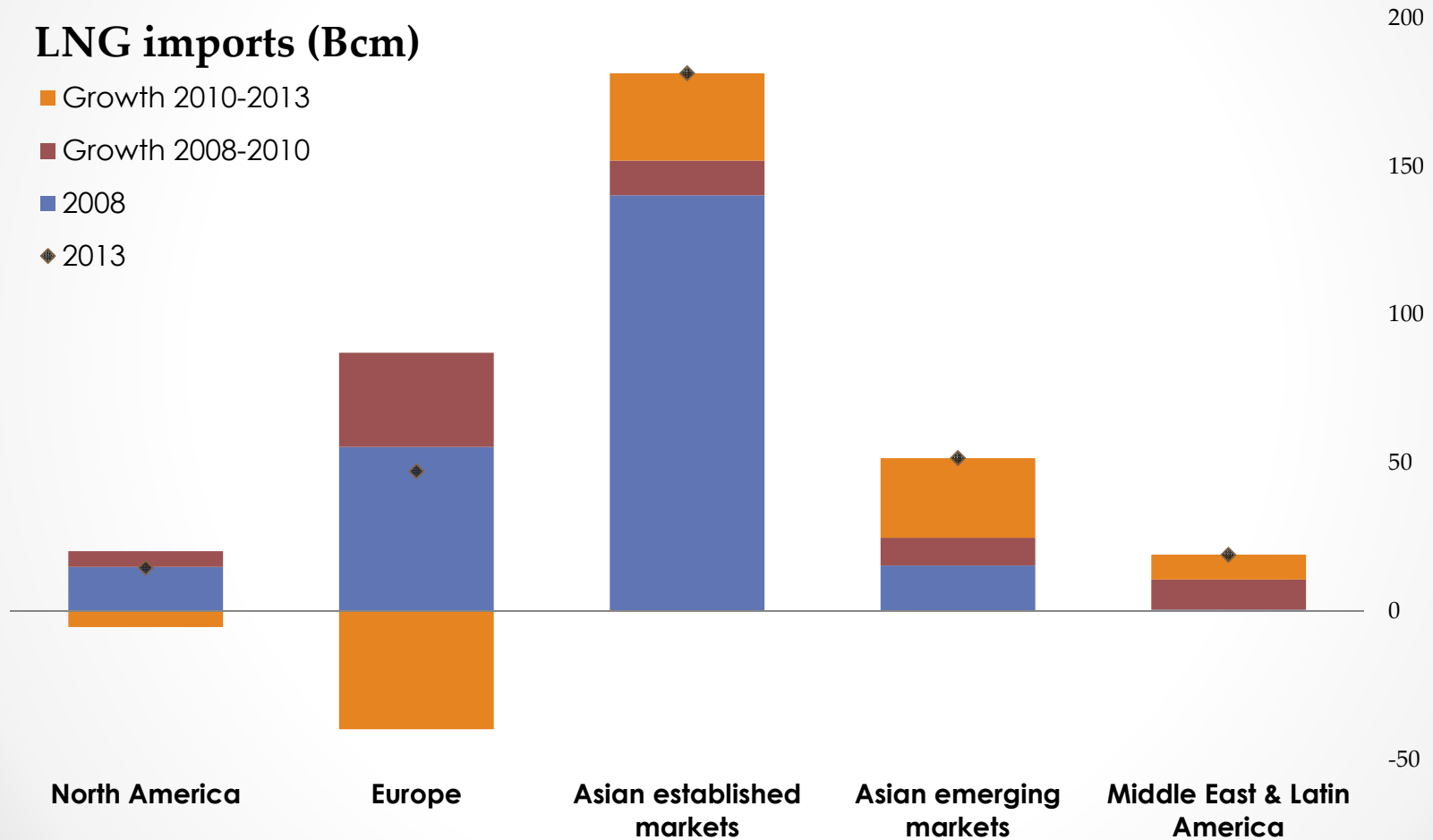
Net exports

■ 2008 ■ 2012 ■ 2013

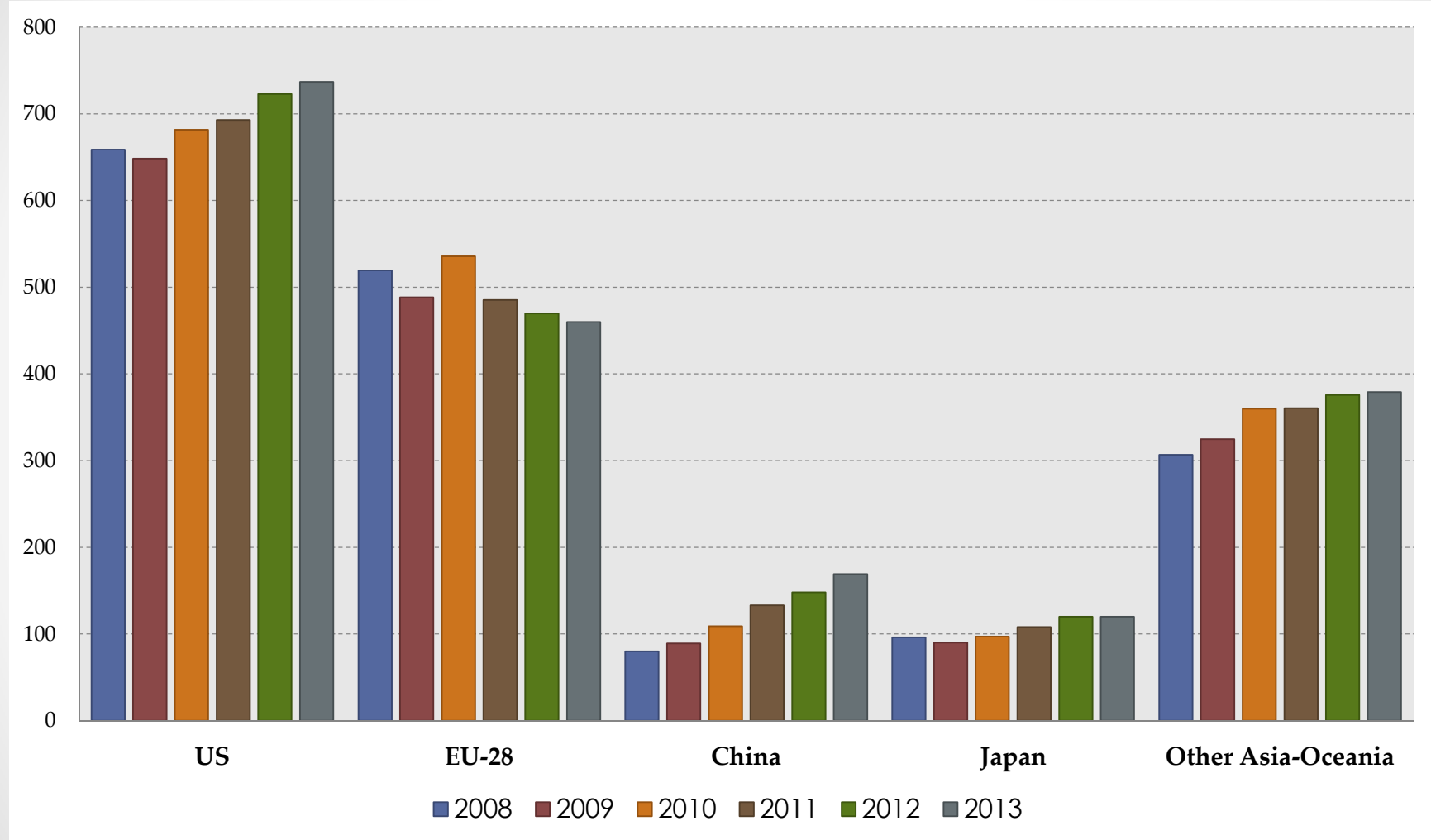


LNG diversions to Asia and Latin America

LNG imports (Bcm)



Actual consumption in main markets



Note: actual gas consumption takes storage variations into account



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2020 Prospects for demand and inter-regional trade

- Growth 2013-2020
- Growth 2013-2020
- 2013: Net imports (+), Net exports (-)
- 2013: Consumption

World gas demand : + 2.3%/year over 2013-2020

GDP Growth 2014-2020: + 3.5%/yr (EU: + 1.5%/yr)

Gas Price - Europe* 2013: \$11/MBtu 2020: \$11/MBtu

DES Price - Asia 2013:\$16/MBtu 2020: \$13.5/MBtu

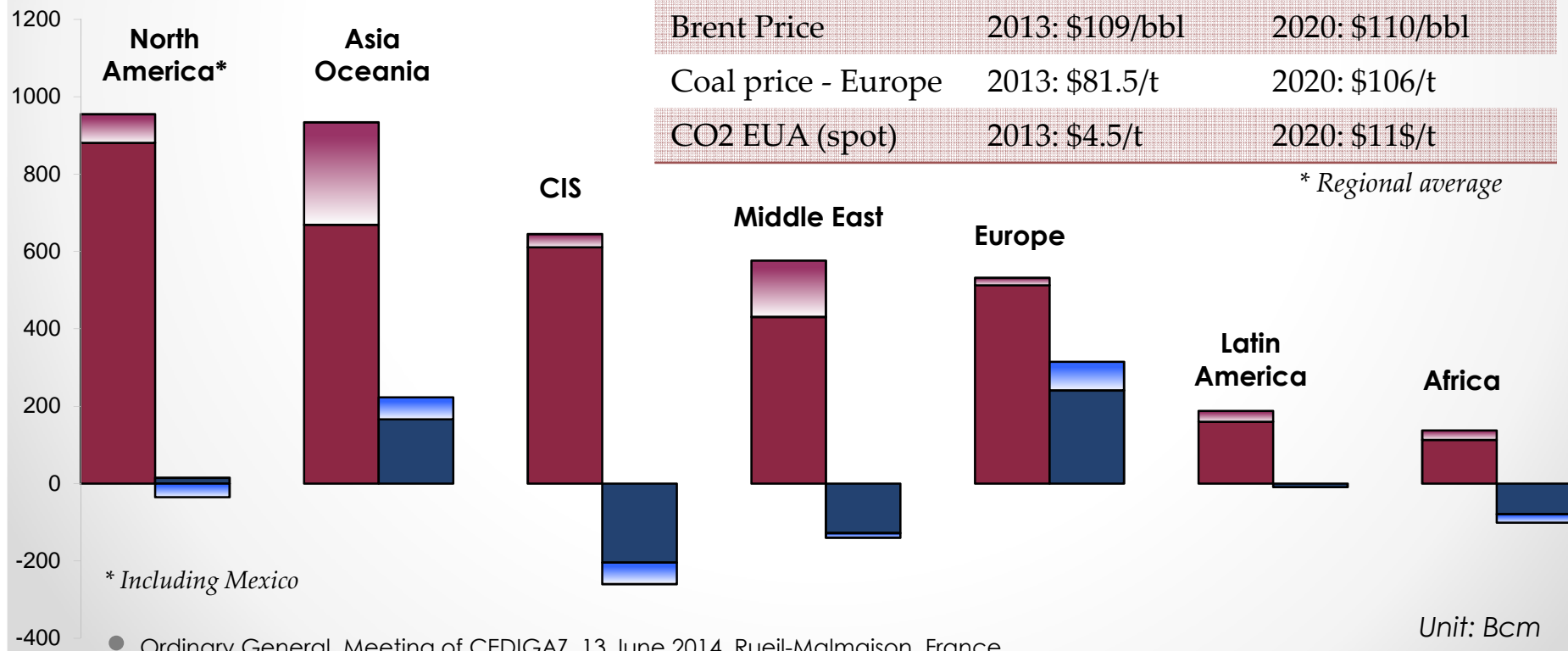
Henry Hub Price 2013: \$3.7/MBtu 2020: \$6/MBtu

Brent Price 2013: \$109/bbl 2020: \$110/bbl

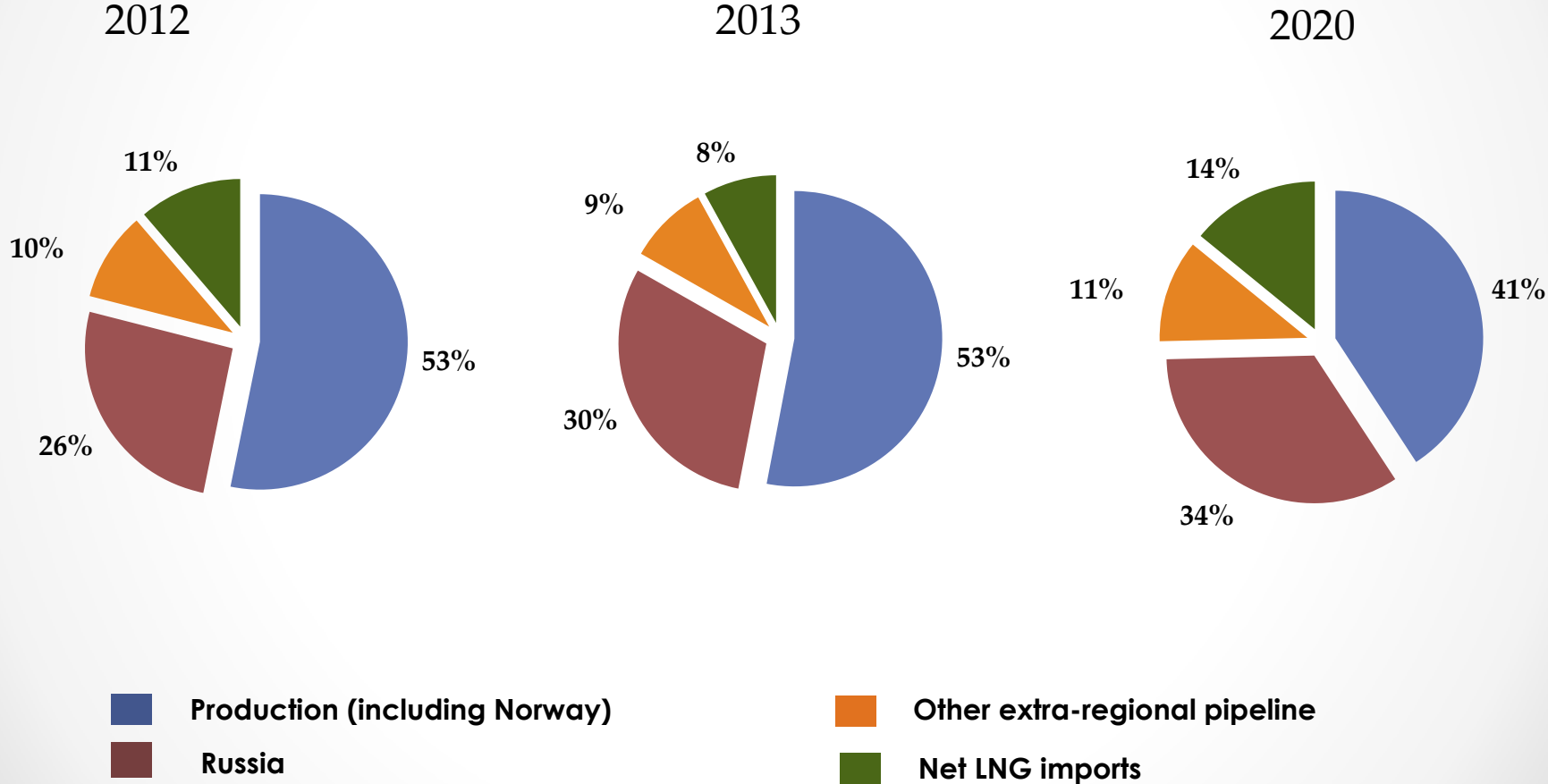
Coal price - Europe 2013: \$81.5/t 2020: \$106/t

CO2 EUA (spot) 2013: \$4.5/t 2020: \$11\$/t

* Regional average

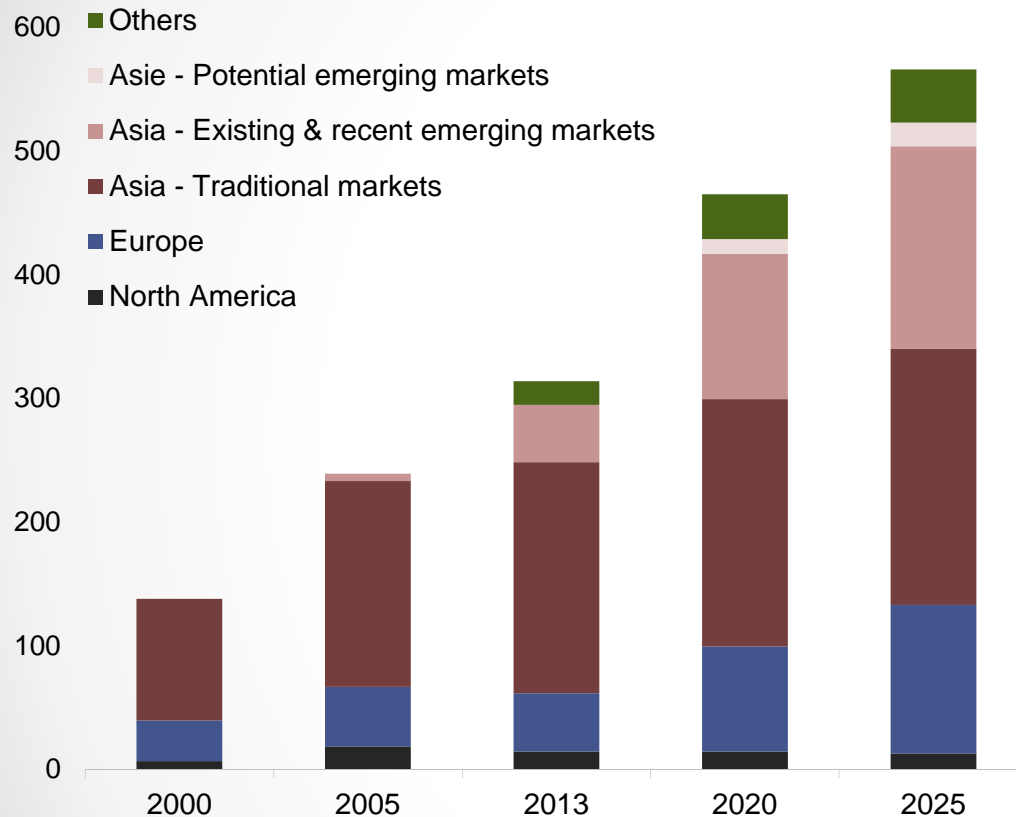


Major shifts in European gas supply



● Ordinary General Meeting of CEDIGAZ, 13 June 2014, Rueil-Malmaison, France

Prospects for LNG demand



Incremental LNG demand (Bcm) 2013 – 2020

World: + 151
 Asia - traditional markets : + 13
 Asia – existing & recent emerging
 markets: +71
 Asia- potential & emerging
 markets: +12
 Europe : + 38
 North America : 0
 Others emerging markets: + 17

Traditional markets : Japan, South Korea and Taiwan.

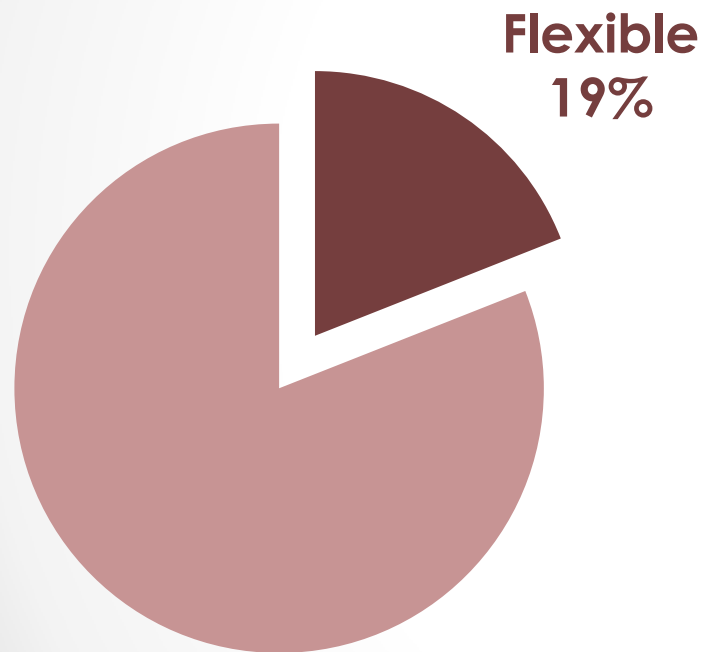
Existing & recent emerging markets: India, China, Thailand, Singapore, Indonesia and Malaysia.

Potential emerging markets: Vietnam, Bangladesh, Myanmar, Philippines and Pakistan.

Limited flexibility on the LNG market

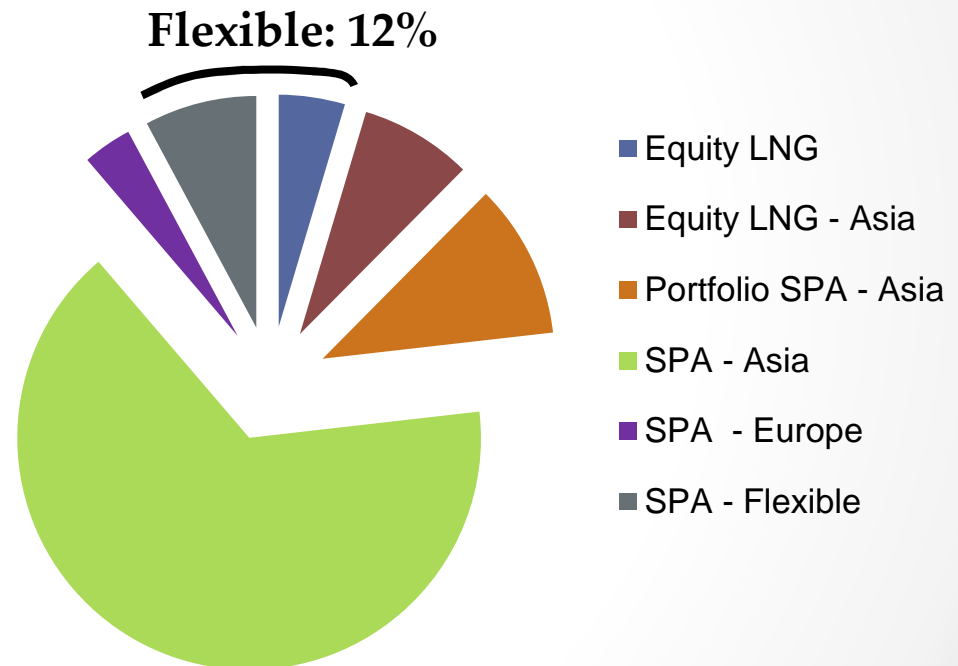
Global LNG trade in 2013

Total = 235 Mtpa



Plants starting 2014-2017*

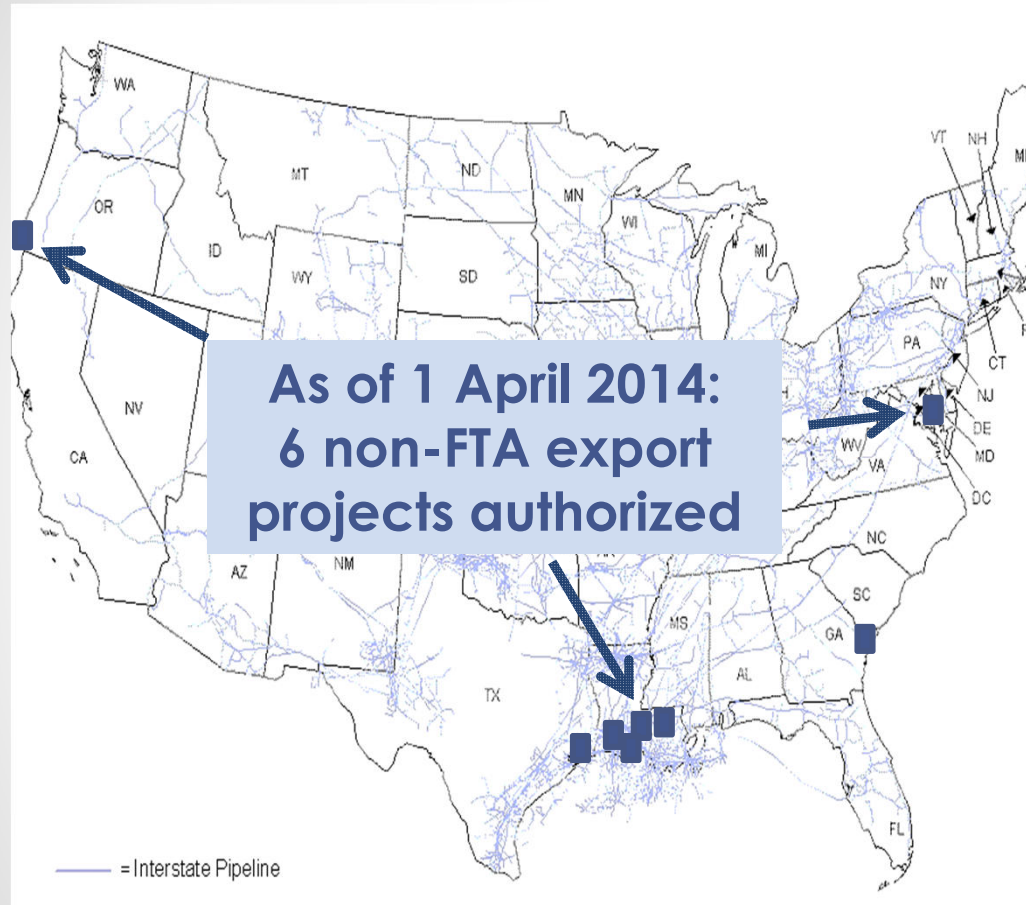
Total = 102 Mtpa



* Yamal LNG is excluded

Source: CEDIGAZ Analysis

US LNG export outlook



US projects with offtake agreements

Project	Capacity (mtpa)	European Utilities (mtpa)	Asian utilities (mtpa)	Other offtakers
Approved:				
Sabine Pass	18	3.5	7	7.5
Freeport (Train 1-3)	13.2		8.8	4.4
Lake Charles	15			15
Cove Point	5.2		5.2	
Cameron	12	4	8	
Jordan Cove	6			
Others	34	3.8	9	22
TOTAL	104	11.3	38	49

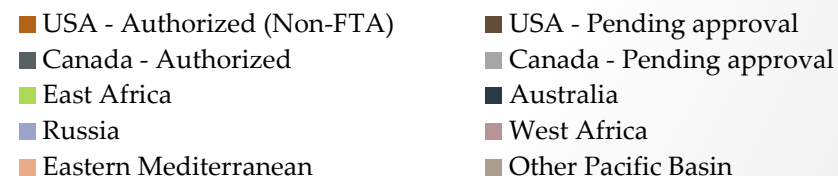
- Approved projects: capacity of 70 Mtpa. But only Sabine Pass has FERC approval
- Offtake agreements: 98 Mtpa secured with utilities and sponsors
- An opportunity to improve flexibility of supply and diversify away from oil-price index

Investment challenges on the liquefaction side

Existing capacity (World): 294 Mtpa

Under construction: 118 Mtpa

Planned: 716 Mtpa



- **In addition to projects under construction, 120 Mtpa*** of additional capacity is required by 2025 (30 Mtpa by 2020). Total capacity targeting FID in 2014 is 110 Mtpa

* Assuming an average operating rate of LNG liquefaction plants of 80%

CONCLUSION

- Risks of tensions on the international LNG market are expected to persist in the next three years
- Growing concerns of security of supply (Europe) and also affordability of supply (Asia)
- Competition for incremental flexible LNG in Europe and Asia (especially India and Southeast Asia) in the medium term
- Emergence of two new leading LNG suppliers by the end of this decade - US and Australia – to compensate for exports constraints in current traditional suppliers (Middle East, Africa)
- But US projects will not capture all the available LNG market demand (Russia-China deals)
- If LNG projects targeting FID will continue to be delayed, Russia will still exert a growing influence in Europe in the longer term