

# THE WORLD'S GAS MARKETS: DEMAND, SUPPLY & TRADE PERSPECTIVES

DAVID DUSSEAULT  
SENIOR MARKET ANALYST

**Gasum**

## Introductory Thought

- The major challenge facing all energy sector firms is:
- *striking the balance between supply and demand; while*
- *providing a competitively priced product in an increasingly volatile market; in addition to*
- *facing stricter environmental regulations.*

## Highlights

- Intense inter-fuel competition means that gas grows more slowly than alternative fuels
  - *Gas needs markets: where there is competitively priced gas, there is limited demand while where demand is high, gas is scarce.*
- Growth markets will be increasingly supplied by North American & Asia / Oceania producers
  - *While it is expected that US, Canadian & Australian supplies will fulfill Asian Pacific's growing need for gas, questions surrounding price & availability circulate.*
  - *Ironically, cheaper pipeline supplies (Russian & Azeri) are available to strategic markets (Europe), but see decreasing demand due to continued economic malaise.*
- Bridging the price gap between the Asian premium & US HH
  - *With growth of 250bcm by 2019 expected, price will be a determining factor to what extent LNG or coal fulfills Asian demand.*

# Demand

## General Overview

- Gas demand has only increased by 1.2% in 2013 due to supply constraints, inter-fuel competition & economic decline.
- By 2019, gas demand is expected to reach 3 980 bcm with marked production declines affecting Europe & FSU.
- The shift towards non-OECD countries continues apace accounting for 85% of new demand.

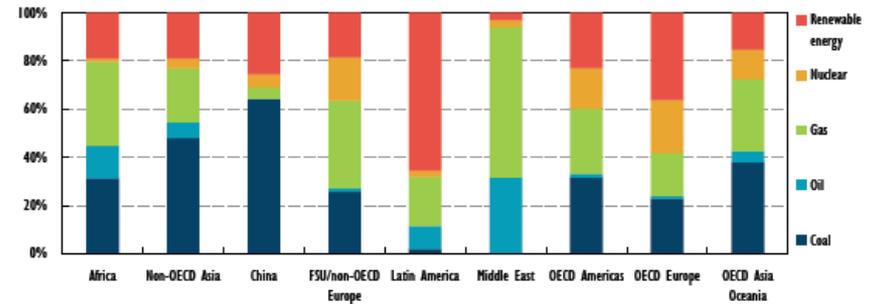
## Global Trends

- Regional scarcity, cost-competitiveness & CO2 footprint have conspired against gas (1.2%) in favor of oil (1.4%) coal (3-4%) & renewables (4%) in H&P.
- Production lags continue due to difficulties in transiting from mature conventional to more demanding greenfield projects.
- Additionally, gas' poor RCA has ceded market share to coal & renewables in H&P.

## OECD Europe

- European demand for gas declines another 4bcm in 2013 with consumption standing at 2003 levels.
- The longer the curve trends downward, the more difficult it is to predict a return to growth before 2019 without significant structural change.
- Downward decline particularly in industrial & H&P sectors has hit Denmark, Estonia, Finland, Hungary & the Netherlands.

Figure 1 Power generation mix by region, 2019



Source: unless otherwise indicated, all material in figures and tables is derived from IEA data.

Table 2 World gas demand by region (bcm)

	2000	2010	2012	2013*	2013/12 (%)
<b>Total</b>					
OECD Europe	475	567	507	504	-0.7
OECD Americas	794	851	902	920	2.0
OECD Asia Oceania	131	198	225	229	1.8
Africa	55	105	118	119	0.6
Non-OECD Asia (exc. China)	155	288	287	283	-1.3
China	28	109	147	166	13.3
FSU/non-OECD Europe	597	681	693	680	-1.9
Latin America	93	151	155	164	5.7
Middle East	180	376	416	426	2.3
<b>Total</b>	<b>2 508</b>	<b>3 326</b>	<b>3 450</b>	<b>3 490</b>	<b>1.2</b>

\*2013 data are estimated.

Note: OECD Americas includes four countries: Canada, Chile, Mexico and the United States. OECD Asia Oceania includes Australia, Israel, Japan, the Republic of Korea and New Zealand.

Table 3 OECD gas demand by country (bcm)

	2012	2013*	%		2012	2013*	%
<b>Europe</b>	<b>507.3</b>	<b>503.6</b>	<b>-0.7</b>	<i>Slovakia</i>	5.3	4.8	-10.1
<i>Austria</i>	9.0	8.6	-5.3	<i>Slovenia</i>	0.9	0.8	-5.7
<i>Belgium</i>	18.3	18.1	-1.3	<i>Spain</i>	32.4	29.8	-8.0
<i>Czech Republic</i>	8.4	8.6	2.4	<i>Sweden</i>	1.2	1.1	-4.0
<i>Denmark</i>	3.9	3.7	-4.3	<i>Switzerland</i>	3.6	3.8	5.4
<i>Estonia</i>	0.7	0.7	1.6	<i>Turkey</i>	45.3	45.7	0.9
<i>Finland</i>	3.7	3.5	-5.4	<i>United Kingdom</i>	78.0	77.3	-0.9
<i>France</i>	42.1	42.8	1.7	Asia Oceania	225.0	229.1	1.8
<i>Germany</i>	85.8	91.3	6.4	<i>Australia**</i>	35.9	34.2	-5.0
<i>Greece</i>	4.3	3.8	-11.5	<i>Israel</i>	2.6	7.0	172.9
<i>Hungary</i>	10.1	9.2	-8.3	<i>Japan**</i>	131.8	130.5	-1.0
<i>Iceland</i>	0.0	0.0	0.0	<i>Korea**</i>	50.2	52.9	5.3
<i>Ireland</i>	4.7	4.6	-3.2	<i>New Zealand</i>	4.5	4.7	3.8
<i>Italy</i>	74.9	70.0	-6.5	Americas	902.0	920.2	2.0
<i>Luxembourg</i>	1.2	1.1	-8.6	<i>Canada</i>	105.8	108.4	2.5
<i>Netherlands</i>	46.0	46.9	1.8	<i>Chile</i>	4.9	4.5	-7.7
<i>Norway</i>	5.2	5.2	1.4	<i>Mexico**</i>	68.3	69.8	2.1
<i>Poland</i>	18.0	18.1	0.5	<i>United States</i>	723.0	737.5	2.0
<i>Portugal</i>	4.5	4.2	-7.0	<b>OECD</b>	<b>1 634.3</b>	<b>1 652.8</b>	<b>1.1</b>

Note: in this report, the percentage points mentioned in tables may not correspond to changes calculated based on yearly numbers due to rounding.

\* 2013 data are estimates as of May 2014.

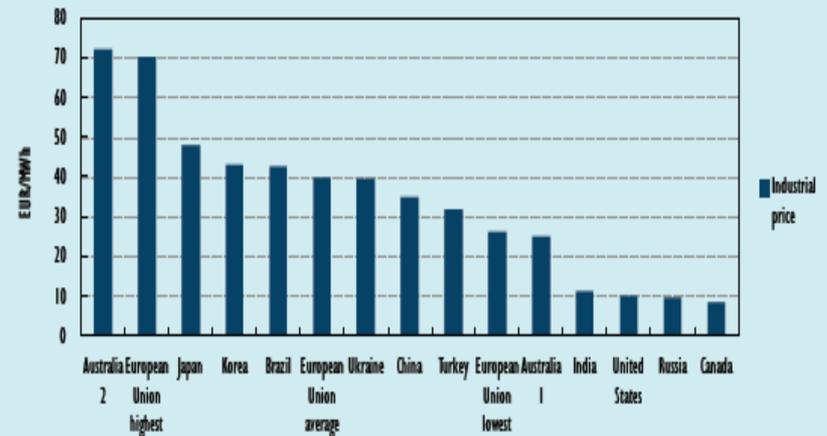
\*\* Data on Japan, Korea and Australia are based on fiscal years (from April to March for Japan and Korea, from July to June for Australia). Due to important statistical differences, Mexican gas demand is calculated based on production, imports and exports.

# Demand Focus: European Industrial Competitive Advantage

- European industrial competitive advantage has become a focal point of the EC in early 2014.
- European industry is additionally burdened by expensive energy compared to major global competitors thus sapping the block of important stimuli for future economic recovery.
- Highlighted solutions include furthering the single energy market, increasing investment in infrastructure, developing domestic energy sources (renewables & unconventional gas) & energy efficiency.
- The EC's research found a mix picture when it came to EU energy costs (wholesale, retail & taxes).
- The energy component of gas remained stable since 2008 while retail (14%) & taxation (12%) have increased.
- Wholesale prices are highest in the Baltics (40%); network costs have dropped on the whole & taxes are highest in Austria, Finland & Sweden (30%).

Box 2 European Union (EU) worries about industry competitiveness (continued)

Figure 8 Comparison of international industrial gas prices (2012)



Notes: Australia 1 refers to prices paid under new contracts by large industrial consumers; Australia 2 means prices paid by small business consumers and by households, respectively, and is based on information on standing offers (default tariffs, exclusive of general sales tax). Prices for Korea and Japan refer to 2011. Prices for Japan, Ukraine, China, Turkey, New Zealand, Russia, Canada and the European Union exclude value-added tax (in the case of European Union and Turkey, also other recoverable taxes, if any). Prices for Korea (2011) and the United States include taxes. No data on taxation in India. The price for Brazil includes federal taxes as PIS and COFINS (social contribution taxes) and state taxes such as ICMS (tax on circulation of goods and services; no value-added or general sales tax in Brazil), which has different rates for each state.

Source: EC, 2014.

# Supply

## General Overview

- Global gas supplies gained 1.1% in 2013 (3,480bcm) with FSU, Europe & ME producers accounting for additional output.
- By 2019, the ME, NA & Oceania will be taking the production lead while FSU & Europe's production rates decline.
- Conditions are structural: pipeline v LNG competition, lack of infrastructure & market development.

## Global Trends

- Unconventional production will continue apace with China (6.5bcm 2015) Argentina & US being joined by Australia by 2019.
- Wildcard conventional producers include Iran & Sub-Saharan African states.
- However, new production regions lack infrastructure & face regulatory, environmental, and commercial challenges.

## OECD Europe

- European production declined by 8bcm in 2013.
- The Netherlands continue to be Europe's swing producer with Groningen supplying 53bcm due to the long winter.
- Other regional producers followed the general trend with Norway's production returning to average following an exceptional year in 2012.

Figure 30 Production variations (bcm and %) by region over 2013-19

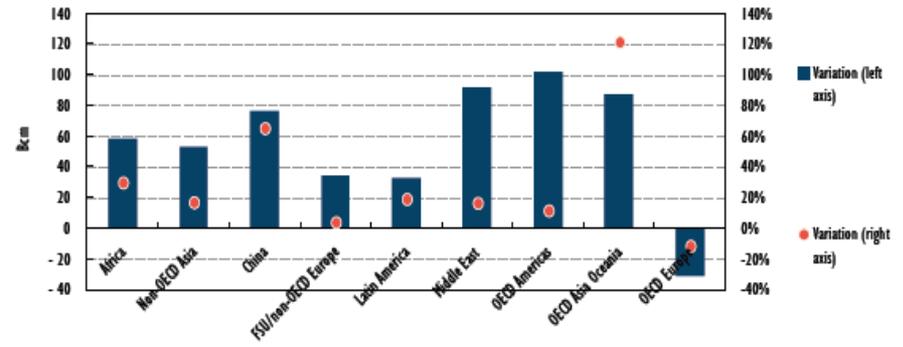


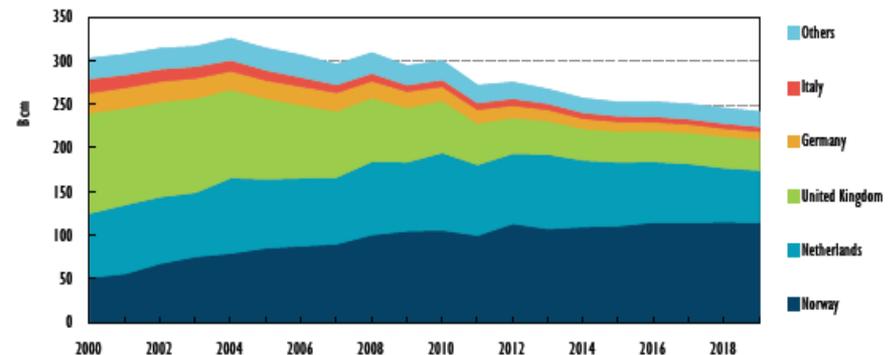
Table 9 World gas supply by region (bcm)

	2000	2011	2012	2012/11 (%)	2013	2013/12 (%)
OECD Europe	303	272	276	1.3	268	-2.9
OECD Americas	760	859	885	3.1	889	0.4
OECD Asia Oceania	42	64	67	4.8	72	8.2
Africa	119	200	204	2.0	196	-4.2
Non-OECD Asia (exc. China)	221	323	318	-1.5	313	-1.4
China	27	103	107	4.4	117	9.0
FSU/non-OECD Europe	725	882	869	-1.5	889	2.3
Latin America	102	166	171	2.8	175	2.4
Middle East	202	519	544	4.8	562	3.2
<b>Total</b>	<b>2 502</b>	<b>3 387</b>	<b>3 441</b>	<b>1.6</b>	<b>3 480</b>	<b>1.1</b>

Note: OECD Americas includes four countries: Canada, Chile, Mexico and the United States. OECD Asia Oceania includes Australia, Israel, Japan, the Republic of Korea and New Zealand.

Source: unless otherwise indicated, all material in figures and tables are derived from IEA data.

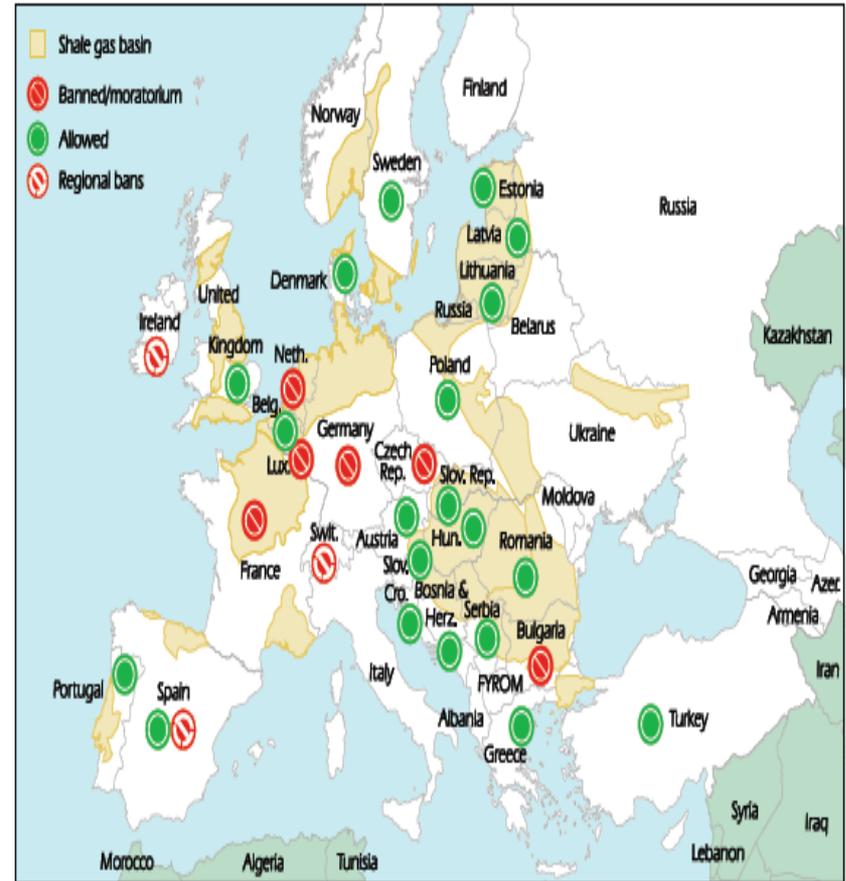
Figure 39 European gas production, 2000-19



# Supply Focus: Europe's Unconventionals

- The EC has chosen not to regulate but publish several recommendations along which unconventional development should take place within the member state context.
- Member state reaction has been a mixed bag with some opting for development while others banning fracking due to standard environmental concerns.
- The UK has been the leader in the EU with the government providing incentives for commercial development; still companies remain hesitant until viability issues become clearer (est: Bowland Basin 37tcm).
- Conversely, Poland's highly publicized boom has failed to materialize owing to poor recovery rates in addition to regulatory & legislative uncertainty.
- The key to unlocking the EU's unconventional reserves remains elusive.

Map 3 Positions of European countries regarding shale gas



This map is without prejudice to the status of or sovereignty over any territory, to the delimitation of international frontiers and boundaries and to the name of any territory, city or area.

# Trade & Pricing

## General Overview

- Pipeline & LNG trade represent opposite ends of the trade spectrum with pipeline supplies increasing (FSU-Europe & FSU/Asia-China) while LNG has stalled.
- Price differential between HH & Asian Spot has decreased; while buyers developing strategies to further bridge the NA-Asia price gap.
- LNG infrastructure continues apace with regasification accounting for 3X total LNG trade resulting in current rates of underutilization.

## Global Trends

- Global interregional trade increased 4% on the back of increased pipeline imports to Europe & China.
- LNG continues to suffer from a structural disconnect between growing demand going unmet by expected supplies (322bcm / 81% liquefaction utilization rate).
- Asia continues to be the major destination for the world's gas with the region's share up to 48% of global demand.

## OECD Europe

- Europe remains the world's largest importer up to 2018 & will become increasingly dependent on pipeline imports as long as LNG finds markets in Asia.
- LNG imports to Europe are expected to recover in 2016; while significant supplies will continue to flow from Russia and increase from Azerbaijan from 2019 onwards.
- If Europe wants more LNG, markets must be developed.

Figure 53 Evolution of regional shares in total exports

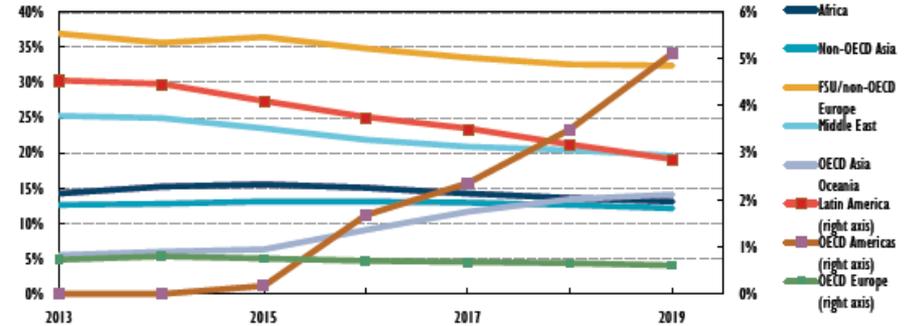
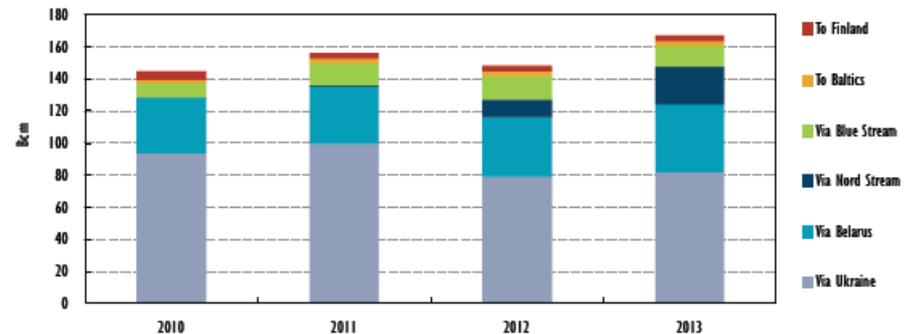


Table 17 Imports by region, 2013 compared to 2012 (bcm)

	2012			2013			2013/12 (%)
	LNG	Pipe	Total	LNG	Pipe	Total	
Africa	0	0	0	0	0	0	0
Non-OECD Asia (excl. China)	35	0	35	42	0	42	22
China	20	19	39	25	28	53	36
OECD Asia Oceania	169	5	174	175	6	181	4
OECD Americas	17	0	17	14	0	14	-11
OECD Europe	66	184	250	46	200	246	-2
Non-OECD Europe	0	16	16	0	12	12	-8
Former Soviet Union (FSU)	0	0	0	0	0	0	0
Latin America	11	0	11	15	0	15	40
Middle East	4	7	11	4	7	11	-3
<b>Total</b>	<b>321</b>	<b>231</b>	<b>552</b>	<b>322</b>	<b>255</b>	<b>577</b>	<b>4</b>

Note: data for 2013 are estimated.

Figure 58 Russian gas flows to Europe through different routes, 2010-13



# Trade Focus: Europe & LNG

- Markets for LNG will remain tight through 2015 when it is expected that supply & demand will begin converge.
- 2014-2015 is a balancing period in which older LNG production is gradually being replaced by new projects expected to come on line.
- Factors which will serve to complicate the rebalancing process include domestic export market pressures (ME / US) price (Australia) & technical delays (Angola).
- Collapse of European demand is also a major contributing factor to high regional price differentials which will be difficult to overcome without structural intervention.
- However, vast new supplies from the US, PNG & Australia have markets; the question is how to make the numbers work.
- Going forward global trade is expected to rise from 322bcm to 450bcm by 2019 with LNG expanding quicker than pipeline supplies matching 11% of expected demand.

Figure 60 LNG exports by region, 2013-19

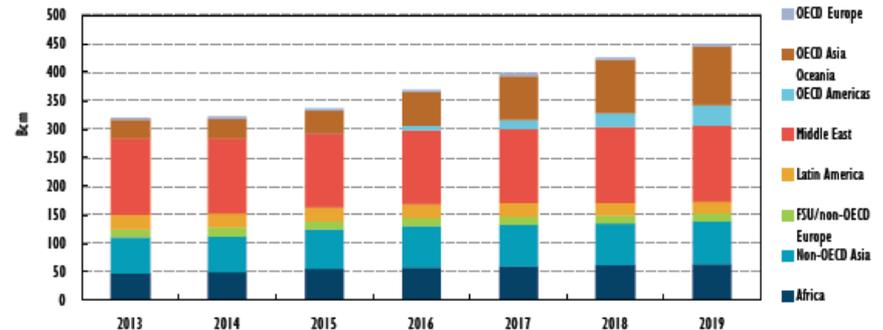


Figure 61 LNG imports by region, 2013-19

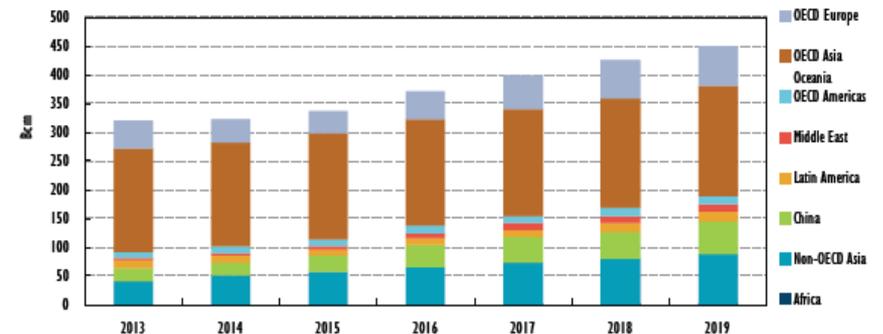
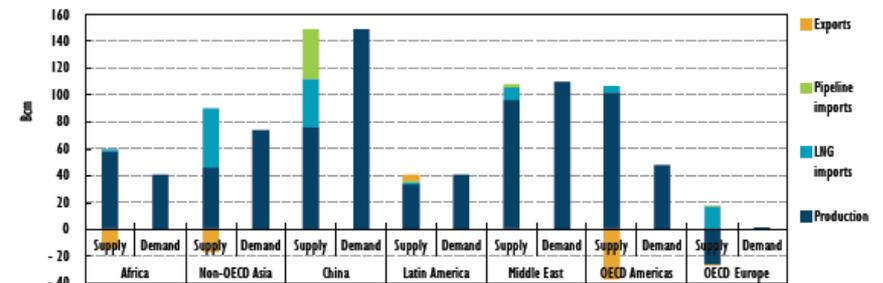


Figure 62 How selected regions meet growing demand, 2013-19



Note: numbers may not add up in OECD Europe and OECD Americas due to storage.

## Conclusions: The View from Espoo

- **Natural gas, particularly LNG, needs markets.**
- **Volumes are available for first movers.**
- **Investments in infrastructure create added value.**
- **Diversification leads to a more sustainable future.**