

GAS

Medium-Term Market Report 2014

Anne-Sophie Corbeau

Senior gas expert



Market Analysis and Forecasts to 2019

Key highlights

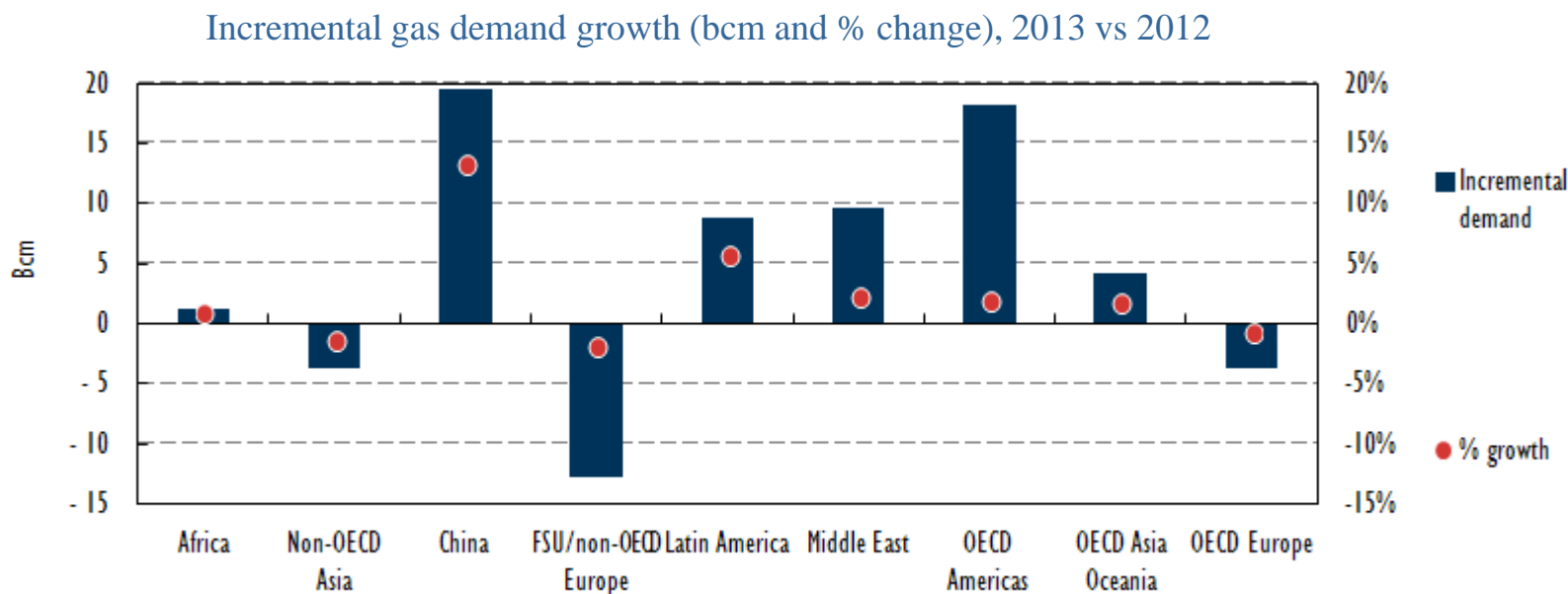
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- Gas demand grew just 1.2% in 2013, well below last decade's average (2.9%/y)
- Gas demand grows at 2.2%/y over 2013-19, on its way to reach 4000 bcm by 2020
- China and the Middle East continue to support global gas demand, while consumption in Europe and FSU does not grow
 - Power generation accounts for half of incremental demand
- OECD Americas and OECD Asia Oceania provide 40% of additional supply
 - The FSU region falls far behind
- Global trade is largely supported by LNG
 - Most of these new LNG supplies goes to Asia, but some returns to Europe, putting pressure on pipeline imports

A look back at 2013

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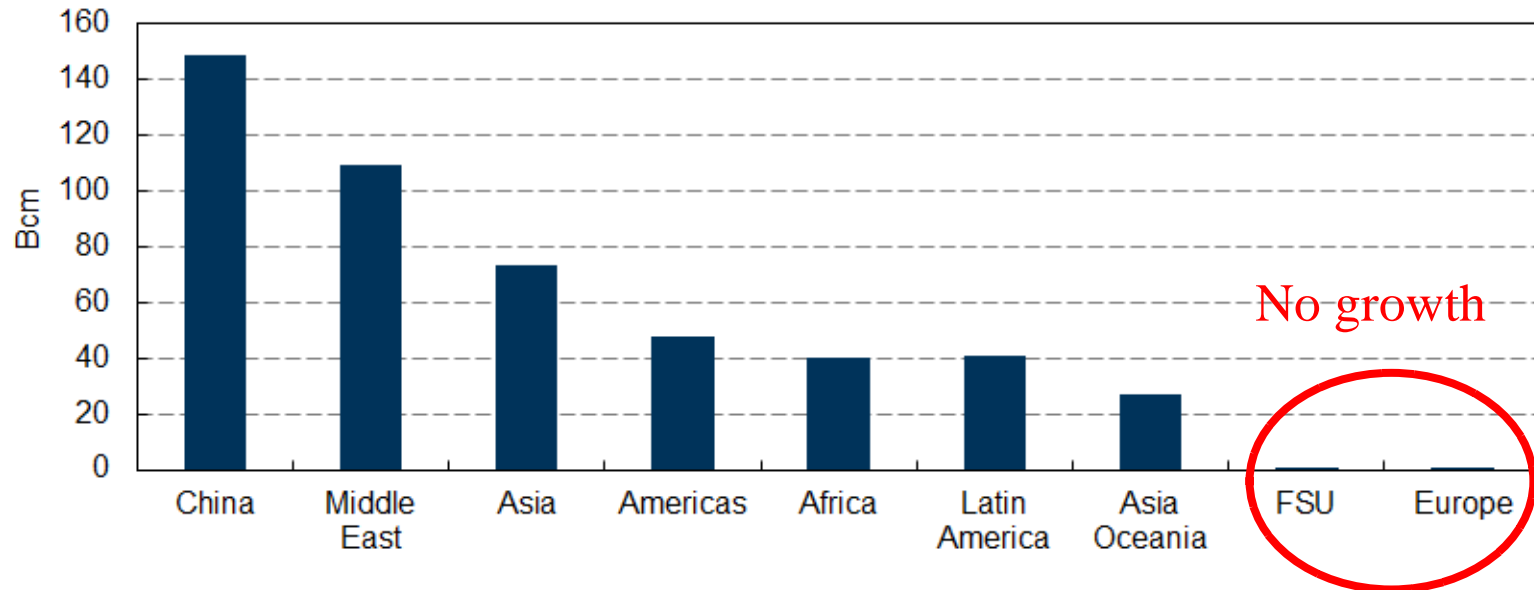


- Gas demand grew just 1.2% in 2013, underperforming other fuels
- The major drivers were a slow growing economy, competition with other fuels, supply constraints, and a sluggish LNG trade
- China and OECD Americas contributed to the largest volumes, while European demand is still declining
- Demand in OECD countries was boosted by cold and long winters; without the weather effect it would have dropped

Demand grows at 2.2% per year over 2013-19

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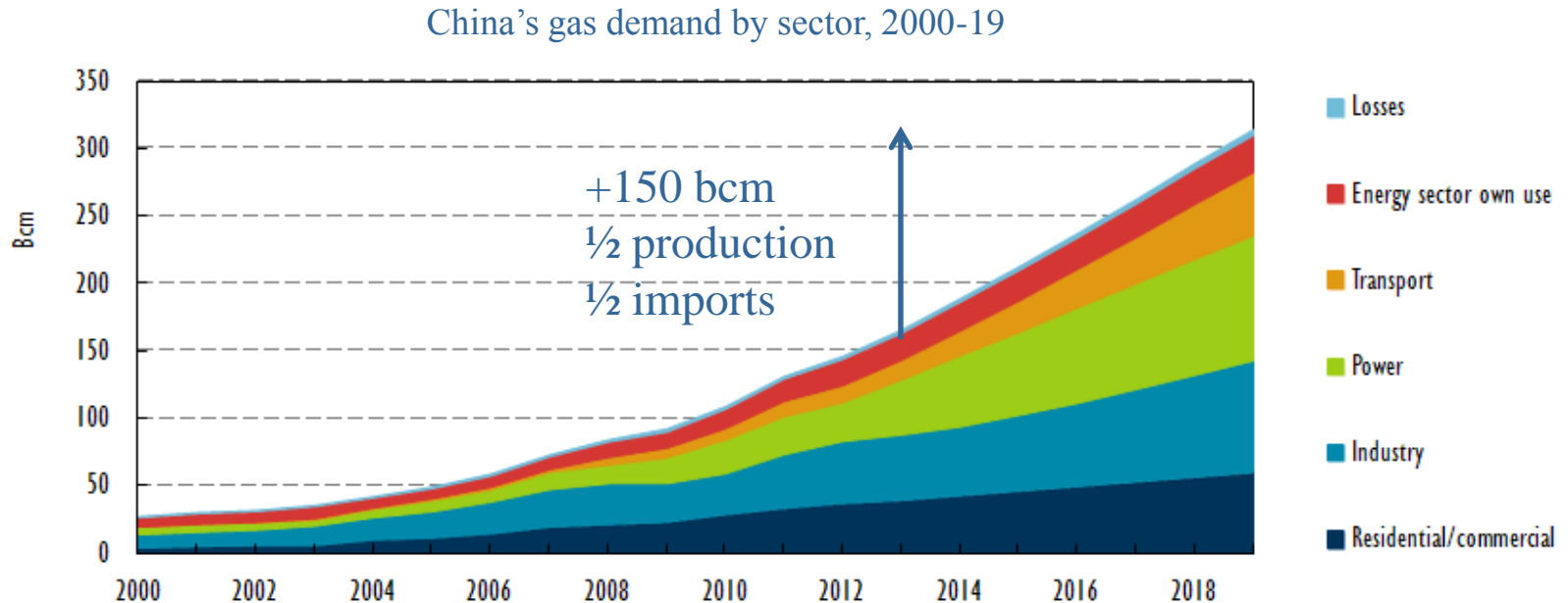
Incremental gas demand by region, 2013-19



- Gas demand is projected to grow by 490 bcm (2.2% per year) over 2013-19
 - This represents a downward revision compared to *MTGMR 2013*, notably due to lower expectations in Europe and FSU regions where demand remains stable
- China represents almost one-third of new demand, followed by the Middle East
- Non-OECD regions provide 85% of the incremental gas demand growth
 - While the potential for higher gas demand is there, it is constrained by insufficient gas supply (domestic production, LNG or pipeline supplies)

Air pollution issues encourages gas use in China

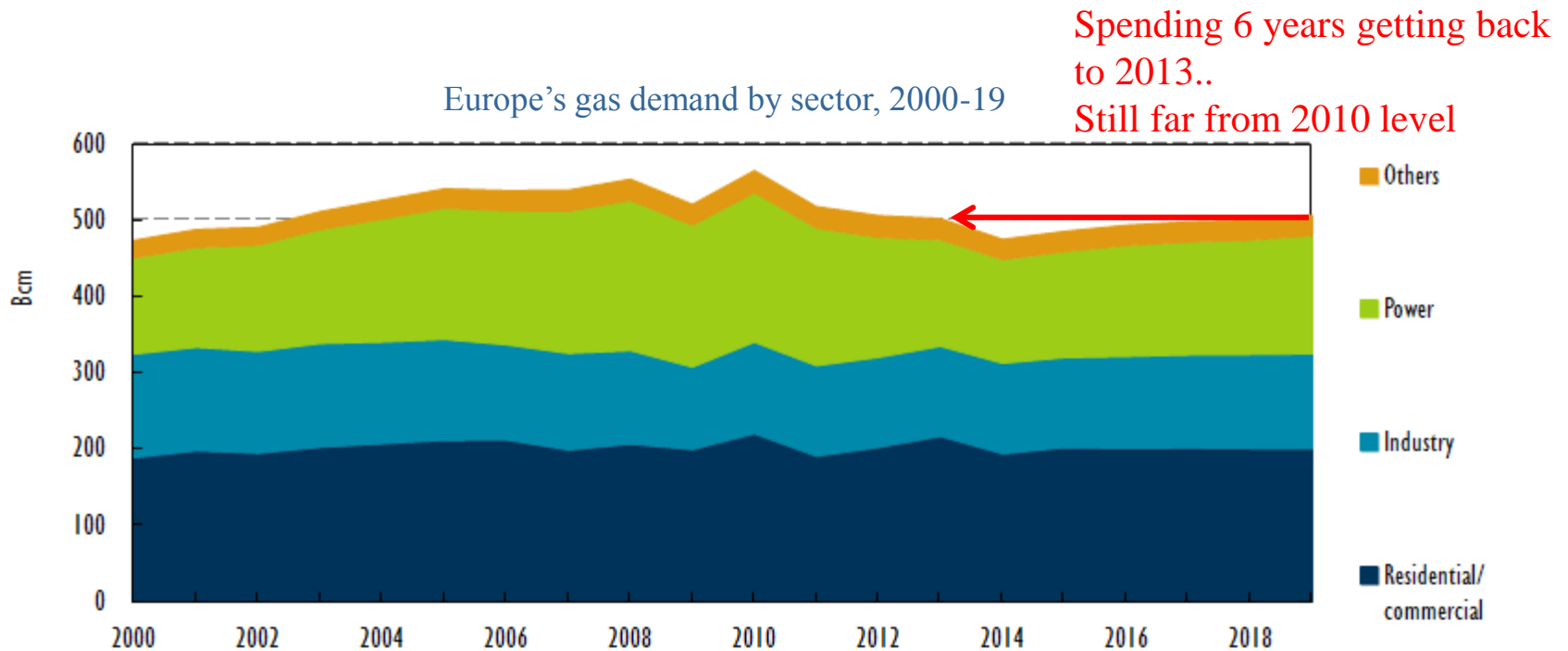
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- Chinese gas demand gains 150 bcm, 2 times UK's gas consumption
- All sectors contribute to the demand additions, in particular the power generation sector and the transport sector
 - Natural gas, together with nuclear and renewable energies will contribute to dampen coal's demand increase in the power generation sector
 - The use of gas in road and maritime transport is promoted by the imperative to improve air quality in big cities

Europe: no miracle...

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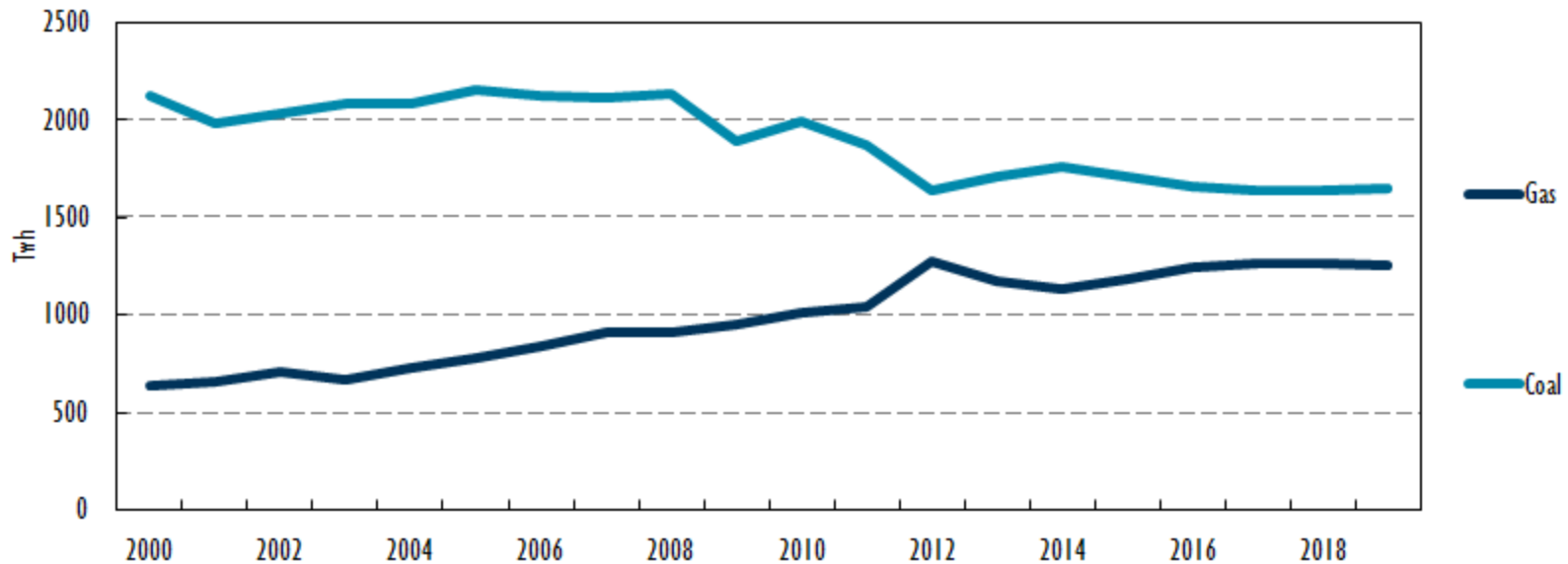


- European gas demand comes back to its 2013 level by 2019
- 2014 is expected to record a very low consumption level (470 bcm), unseen since the early 2000s
- While industry's gas demand is relatively stable, consumption in the res/com sector is declining
 - Only demand in the power sector will "progressively" gain some strength, but we are still way below the levels reached before 2009

Who said coal was a thing of the past in the United States?

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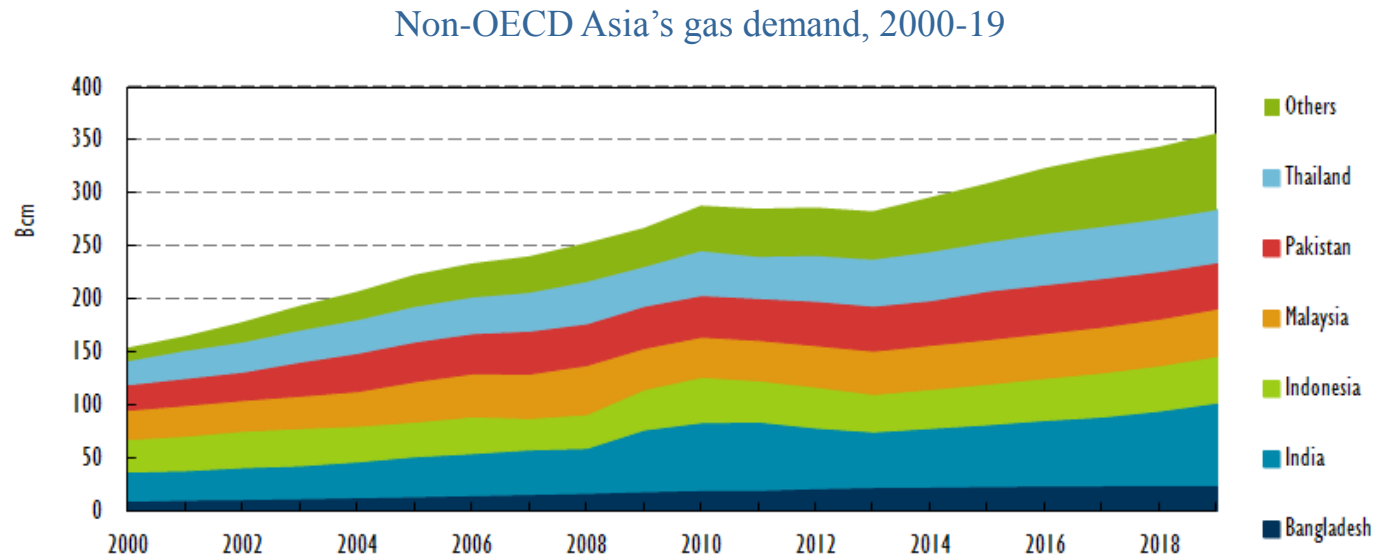
Gas-fired and coal-fired generation in the United States



- While gas is still gaining some market share, the growth is slowing down from 2014 onwards
- After a drop in 2012, coal-fired generation increased in 2013, on the back of higher gas prices and stable power demand
- At gas prices around \$4, gas-fired plants are struggling more to gain market share
- But new environmental regulations are expected to impact coal-fired generation

Non-OECD Asian demand grows much faster than supply

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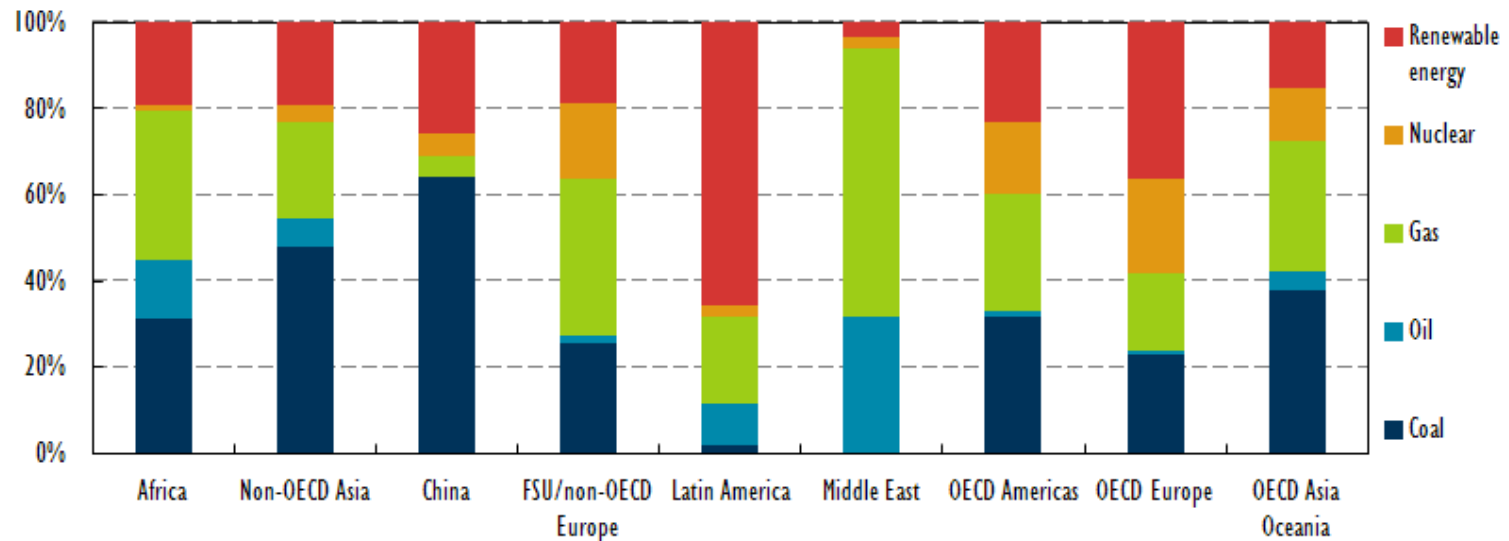


- Non-OECD Asia demand will gain around 74 bcm: demand grows faster than supply (+44 bcm)
- Consequently, the region moves closer to be a net importing region
 - There will still be LNG exports and pipeline exports (Myanmar)
 - Non-OECD Asia will also become a key LNG importing region
- The key issue is affording for supplies as LNG imports are far more expensive than prevailing domestic gas prices in India and Southeast Asia

Power contributes to 53% of the demand growth

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Power generation mix by region, 2019



- **Gas demand increases by 258 bcm in the power generation sector**
 - Industry is the second largest contributor with 154 bcm (32% of the incremental demand)
 - Gas contribution is the largest in non-OECD countries' power sector, as demand grows modestly in OECD regions, except in OECD Americas
- **But gas's share in total power generation barely increases by 0.5% over 2013-19, comprising only 22% of the total due to the competition of renewable energies or coal**

Use of gas in new areas

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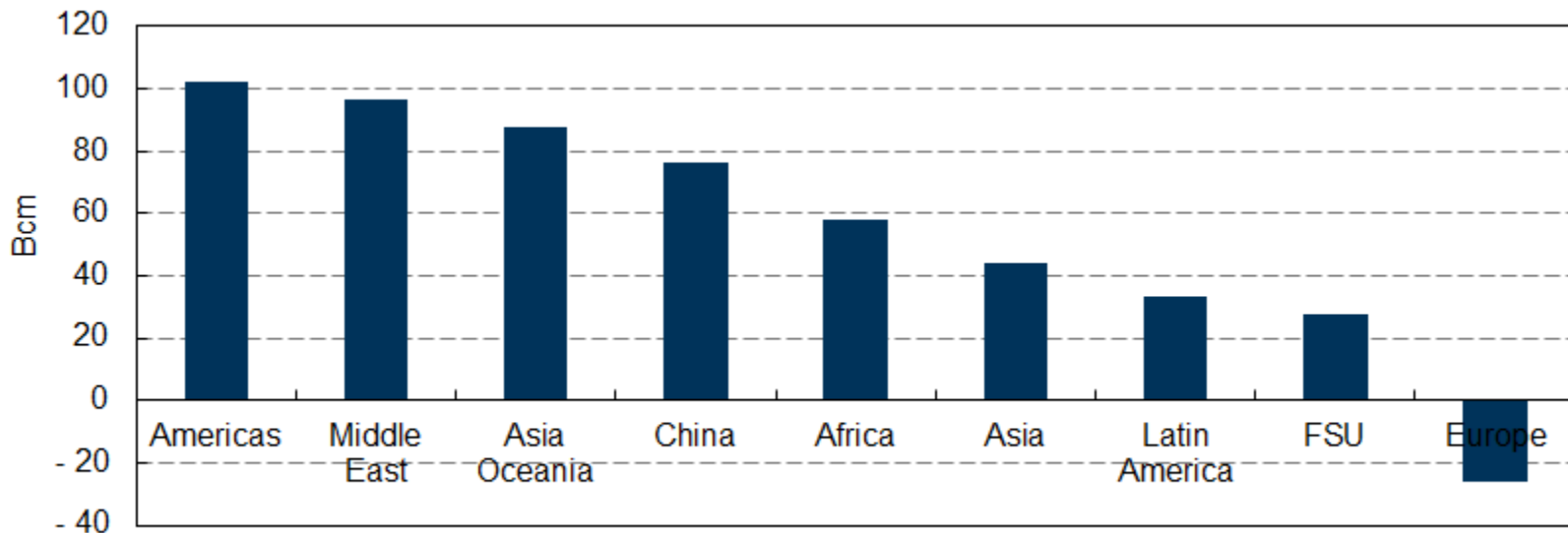


- Gas use in road transport will double to 90 bcm by 2019
 - The main story here is by far China
- Another sector is worth mentioning: maritime transport
- International marine bunker demand is currently estimated to be a 4 mb/d market
 - Due to new regulations on sulfur content, ship owners will have to choose different options while sailing in Emission Control Areas: marine diesel oil, scrubbers or LNG
- This is creating interest in Europe, North America but also in China (domestic navigation)

Two OECD regions contribute to 40% of the additional supply

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Incremental gas supply, 2013-19



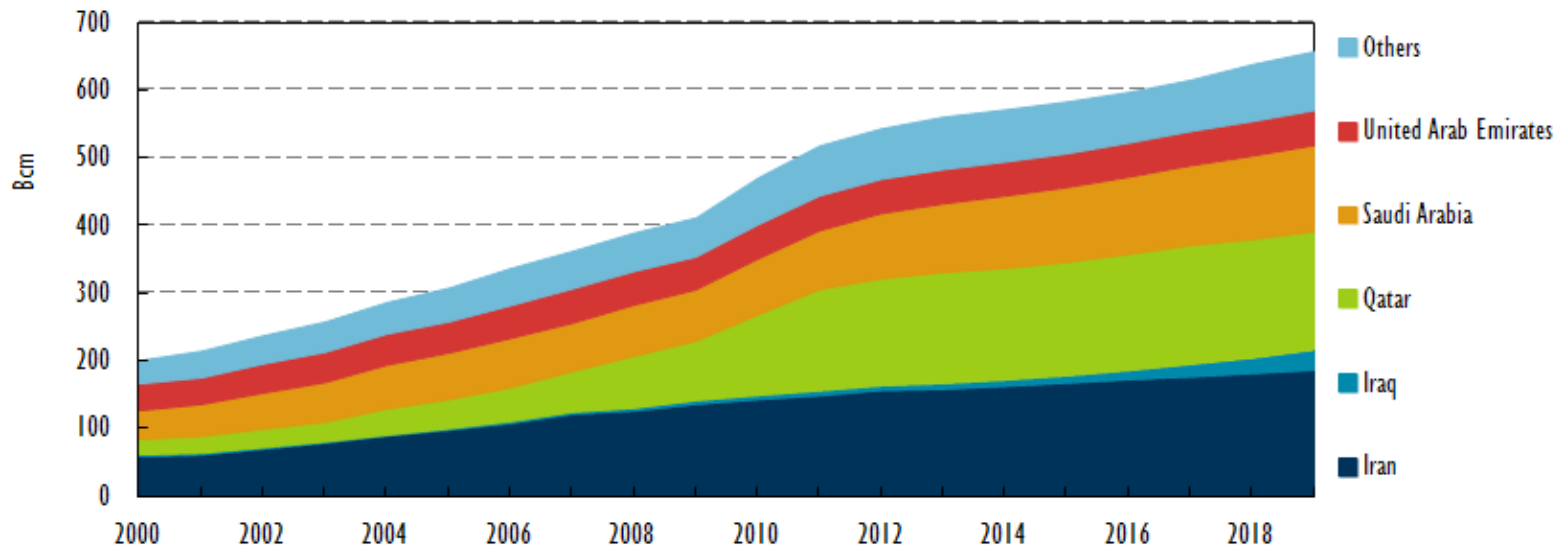
- **OECD Americas and Asia Oceania will represent 40% of additional supply**
 - **OECD Americas serves both its domestic market and new LNG exports**
- **The Middle East follows, with higher expectations from Iran**
- **China's gas output grows significantly, but not sufficiently to meet demand**
 - **Of particular interest is coal gasification adding 40 bcm by 2019**
- **FSU production falls significantly behind due to 1) anemic growth in the region, 2) competition to supply Europe, and 3) the absence of new export routes from Russia (LNG or pipeline)**

Middle East's net exports decrease...

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Middle East gas production, 2000-19

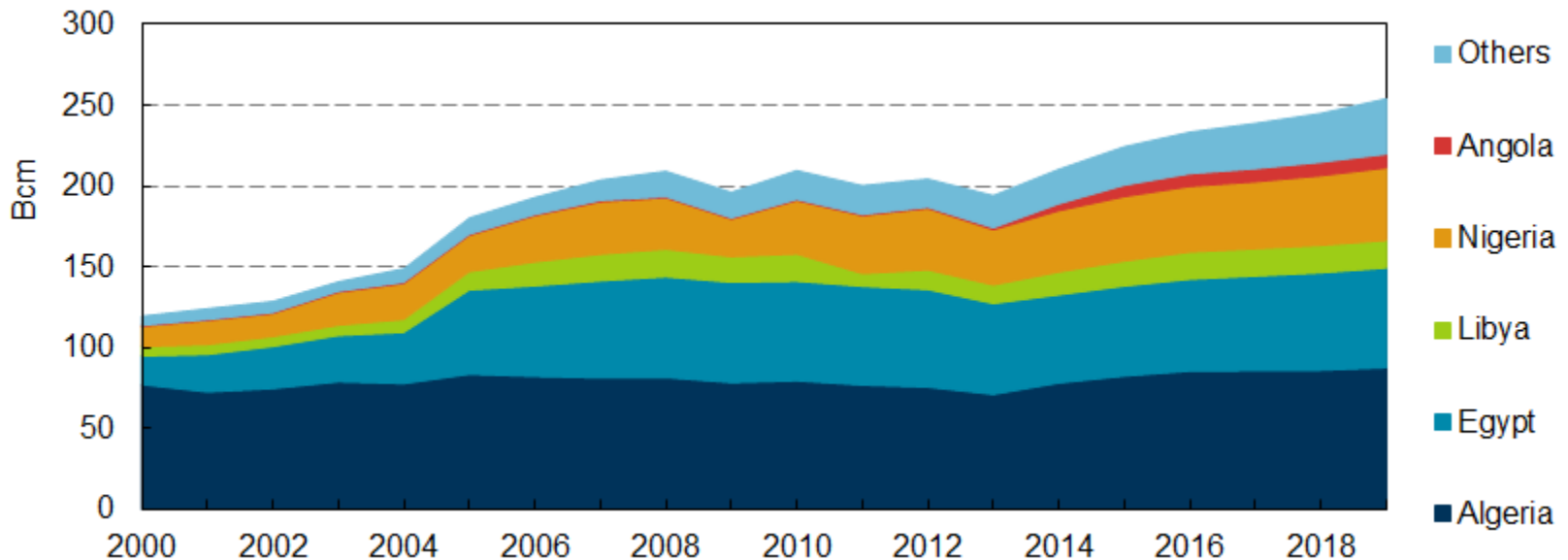


- Middle Eastern gas production is to grow less than demand, resulting in lower net exports
- A few countries continue to face gas shortages like Kuwait, the UAE, Jordan and turn to imports
- Iran is a significant wild card, where there is potential for improvement
- Iraq is self sufficient: any issue with gas production will only impact domestic demand

While Africa's production is expected to recover

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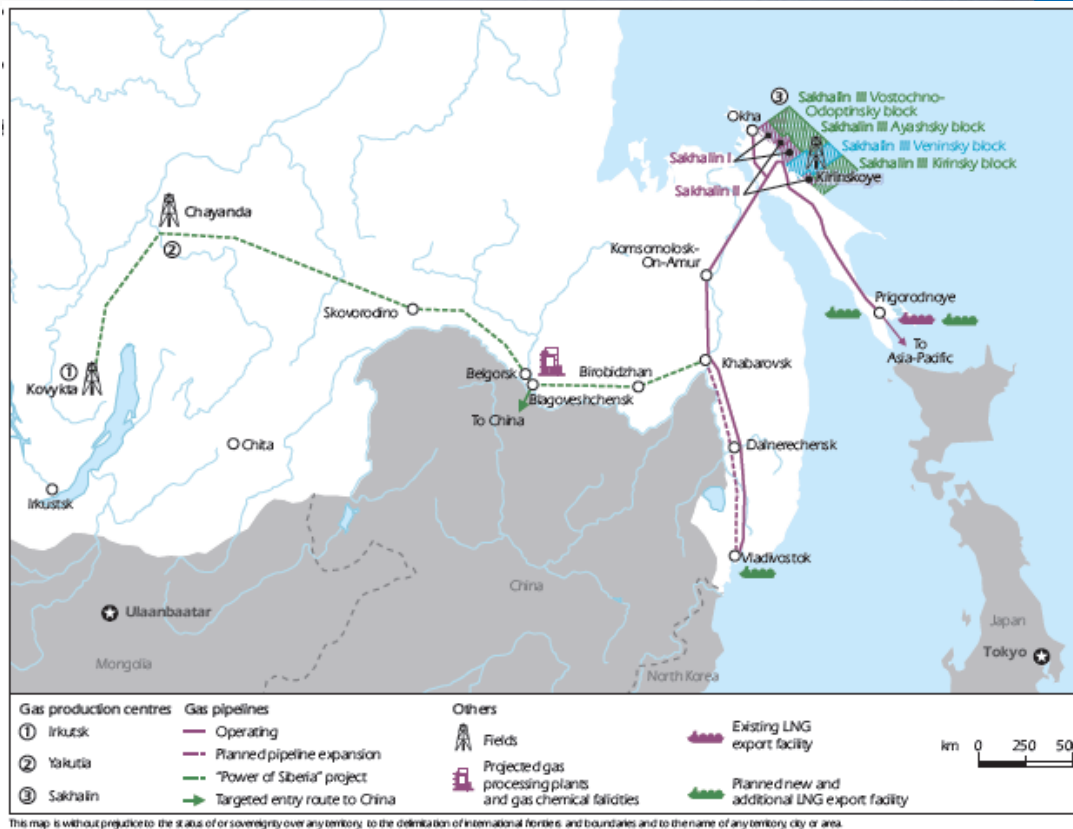
Africa's gas production, 2000-19



- Africa is one of the few regions where net exports are growing, even though the region starts importing LNG
- The main gas producers are all facing challenges as their production growth meets mostly domestic gas demand and hardly contributes to exports
- New gas production also comes from new countries such as Angola
- East Africa: a few more years to wait

Russia awaits for better days

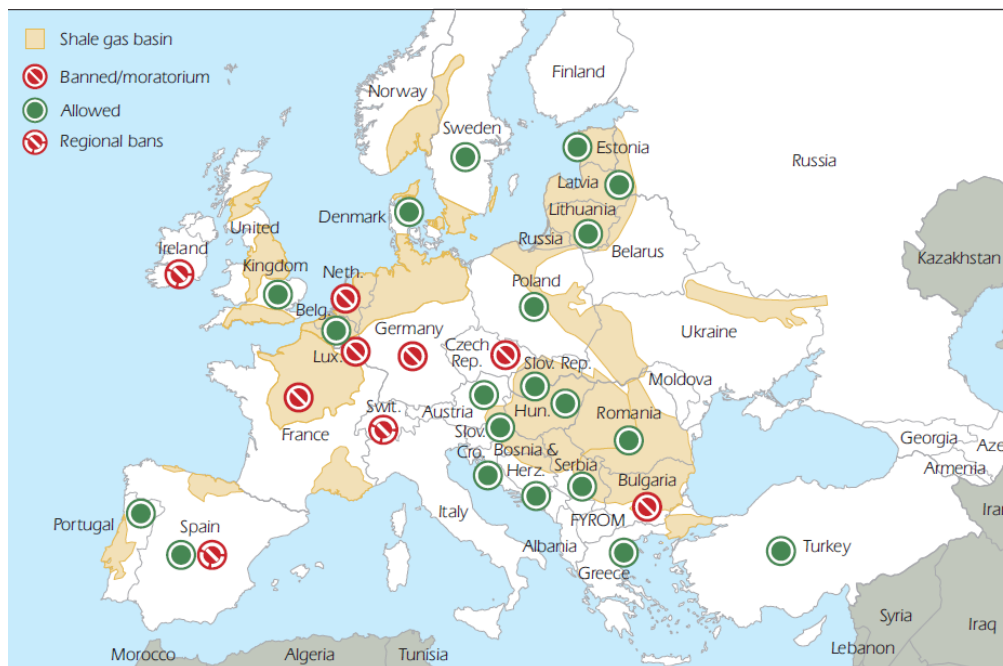
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- Russia has made lots of progress on export projects: Yamal is moving forward and the China pipeline deal has been (finally) signed
- The decline in FSU demand (Ukraine, non-OECD Europe), no demand growth in Europe with a slow return of LNG and a late start of export projects means that Russian gas production will not increase much

Unconventional gas production still faces hurdles

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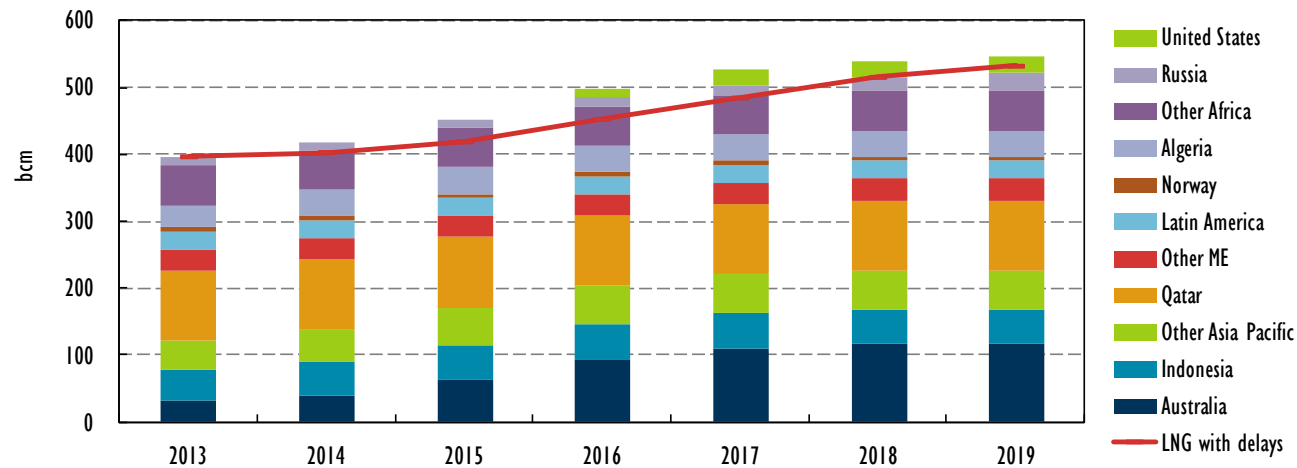


- Unconventional gas production represented 18% of global gas production as of 2013
 - 86% is located in North America
- Shale gas is now also produced in China and Argentina, even though volumes are small
- China seems now likely to meet its 2015 target (6.5 bcm of shale gas), and will be one of the growth centre for unconventional gas production
 - Along with North America and Australia
- Many countries are still facing hurdles such as access to water, local opposition, lack of infrastructure, and pricing issues

A new wave of LNG export capacity is under construction

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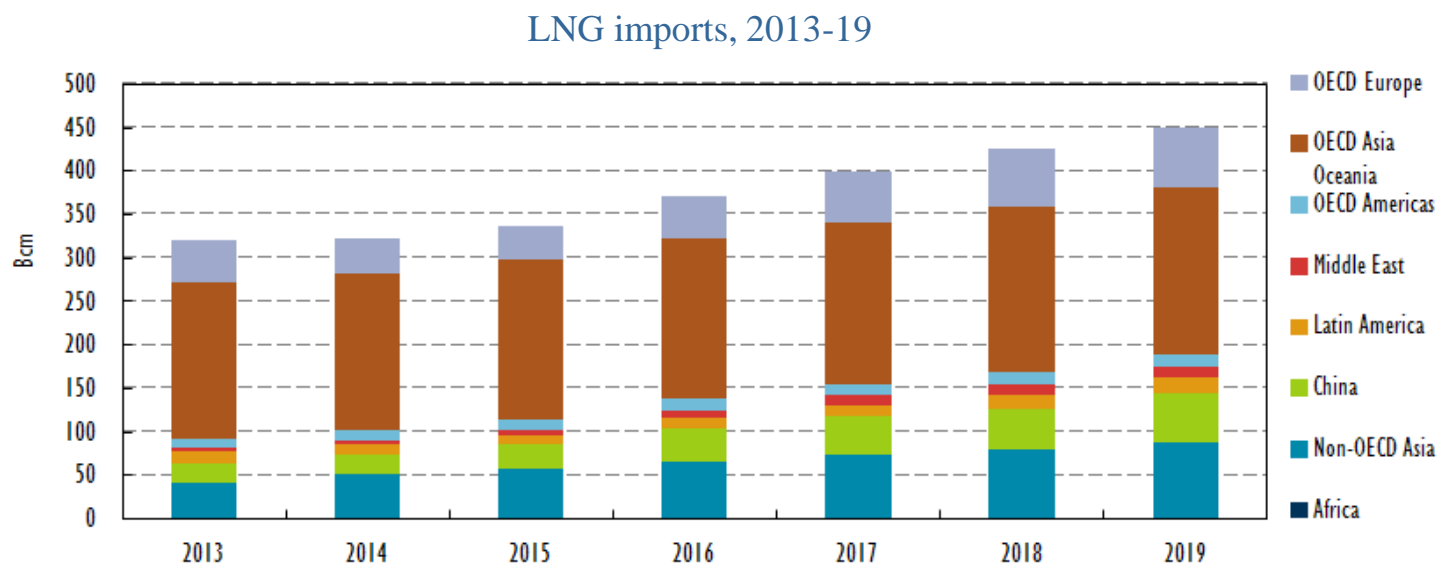
LNG liquefaction capacity, existing and under construction



- A new wave of LNG supply has already started with Papua New Guinea
 - Including 80 bcm of Australian projects
- Only one US LNG project is currently under construction (Sabine Pass),
- Most of the new LNG output will meet incremental LNG demand
 - But some will also replace declining LNG production in mature LNG exporters
- To watch: FLNG in Australia, Malaysia and ... Colombia

And will contribute to feed Asian LNG demand

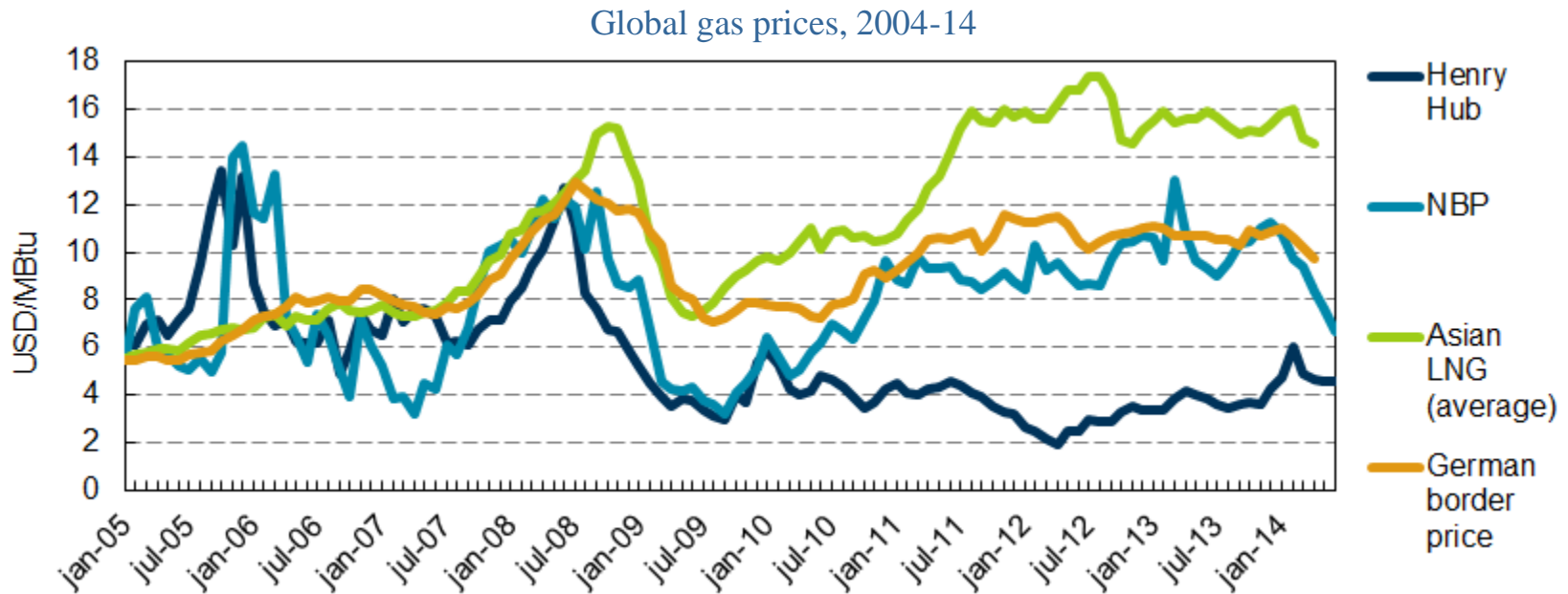
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- Global LNG trade will amount 450 bcm in 2019, against 322 bcm in 2013
- The short-term features tight LNG market as demand growth outpaces supply
- 75% of the LNG will be consumed in Asia by 2019 (against 76% in 2013),
 - In particular, LNG demand in non-OECD Asia and China increases by 80 bcm
- A key component of global gas exchanges is how China fills its rising import needs: more pipeline gas implies lower LNG needs, therefore more LNG available for other regions
- Non-OECD Asia's appetite is huge, but the region has to solve the issue of low subsidised gas prices

The gas price stalemate

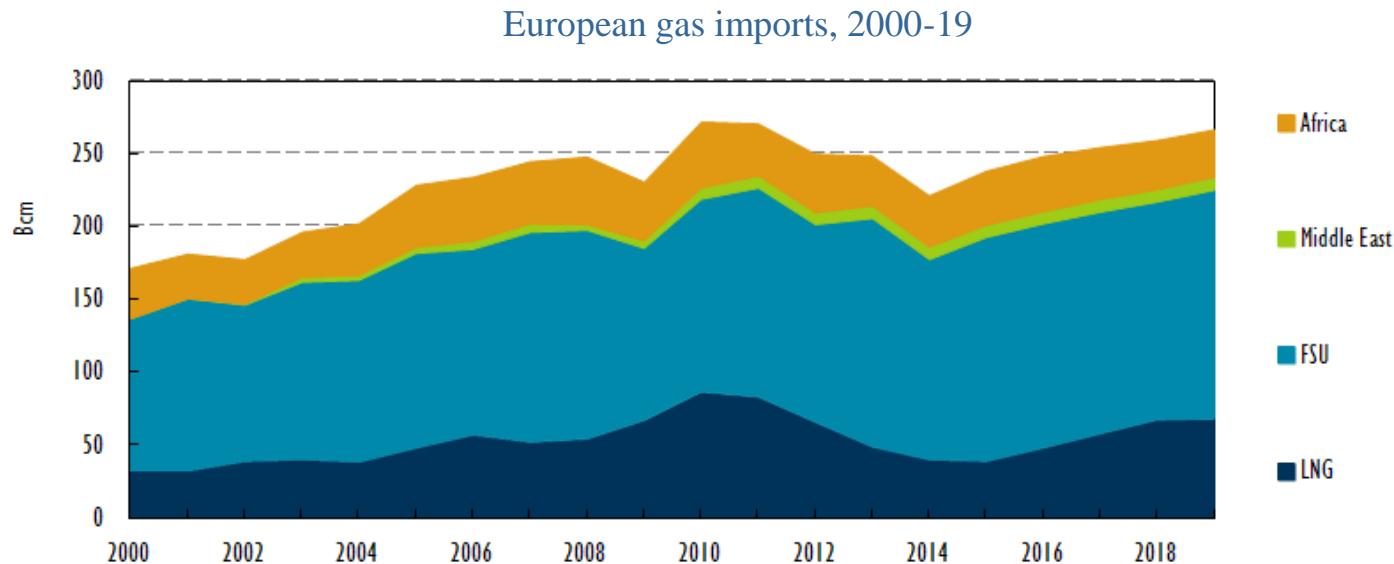
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- Global gas prices have been diverging widely, with a \$12/MBtu gap between US and Asian gas prices in 2013
 - As of mid 2014, NBP prices fell sharply and well as spot LNG in Asia (\$11/Mbtu)
- Asian buyers are no longer ready to pay such high gas prices, and are seeking spot-indexed gas such as US gas (HH-indexed, more flexibility) and invest in new LNG export regions
- Existing contracts as well as those supporting LNG projects under construction means that oil indexation could remain predominant in Asia
- Developing a trading hub is still at least a decade away, but tangible steps are done in that direction

Europe does not quite manage to reduce Russian gas imports

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- In a context of anemic demand, European gas imports still increase due to production drop
- Russia remains a large component of Europe's supplies, even if its contribution going forward will be lower than the 2013 peak
- No significant upside can be expected from North African gas or Middle Eastern gas (Iran)
- Azeri gas will appear but only towards the end of the period
- A major uncertainty remains the quantity of LNG coming back to Europe which acts as the residual market
 - Should Asian demand be higher, this would translation into higher Russian exports to Europe

Thank you for your attention!

Anne-Sophie.Corbeau@iea.org