GAS Medium-Term Market Report 2014

International Energy Agency

Presentation to the

New York Energy Forum

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Market Analysis and Forecasts to 2019

Key highlights

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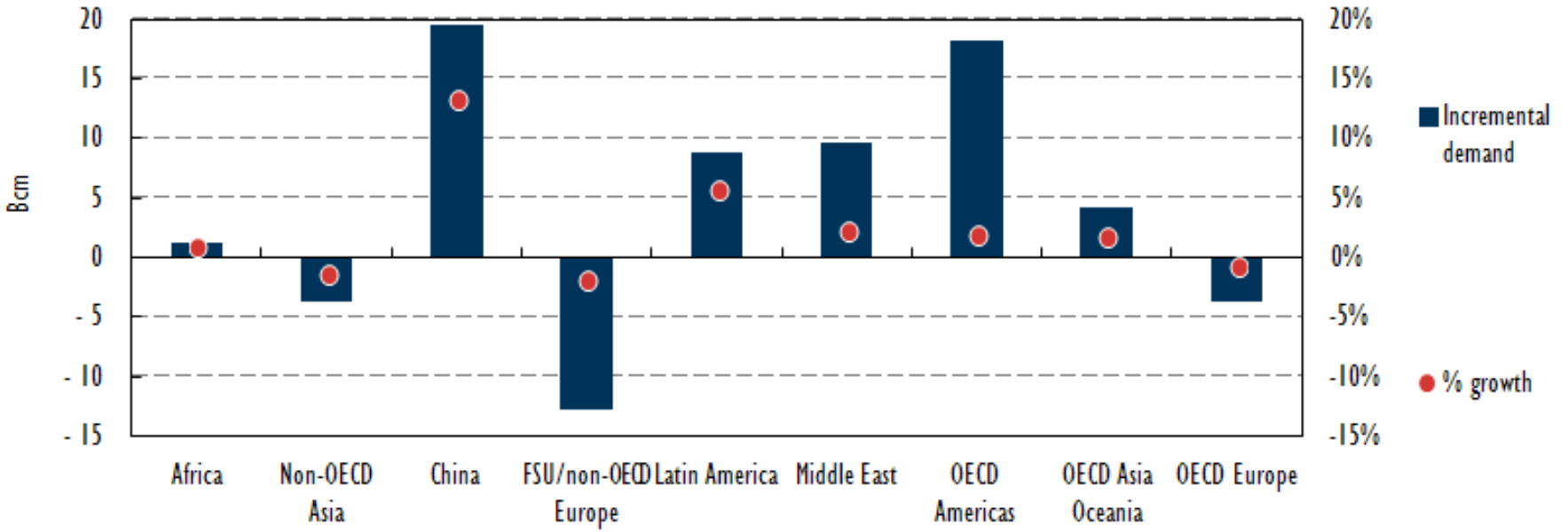
- Gas demand grew just 1.2% in 2013, underperforming other fuels
- Gas demand will grow at 2.2%/y over 2013-19, on its way to reach 4000 bcm by 2020
- China and the Middle East continue to support global gas demand, while Europe and FSU consumption remains stable
  - Power generation accounts for half of incremental demand
- OECD Americas and Asia Oceania will provide 40% of additional supply
  - The FSU region falls far behind
- Global trade expands by one-third, supported by strong LNG growth
  - Most of the LNG goes to Asia, but some returns to Europe, putting pressure on pipeline imports from FSU

A look back at 2013

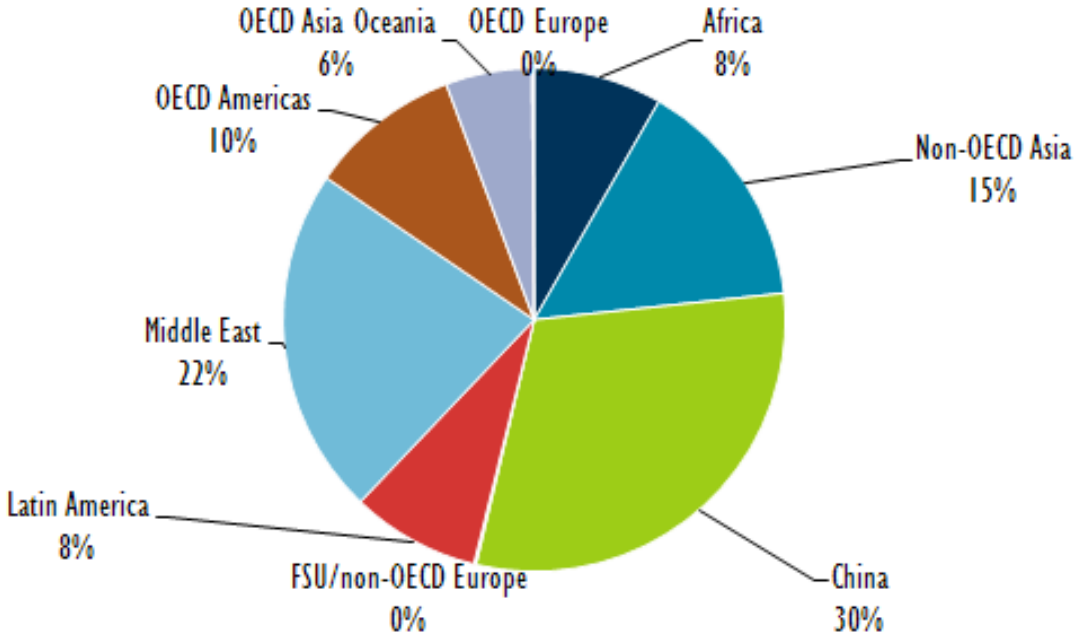
Incremental gas demand growth (bcm and % change), 2013 vs 2012



- **Gas demand grew just 1.2% in 2013, underperforming other fuels (coal estimated at 3-4%, oil at 1.4% and renewable energies at above 4%)**

Demand grows at 2.2% per year over 2013-19

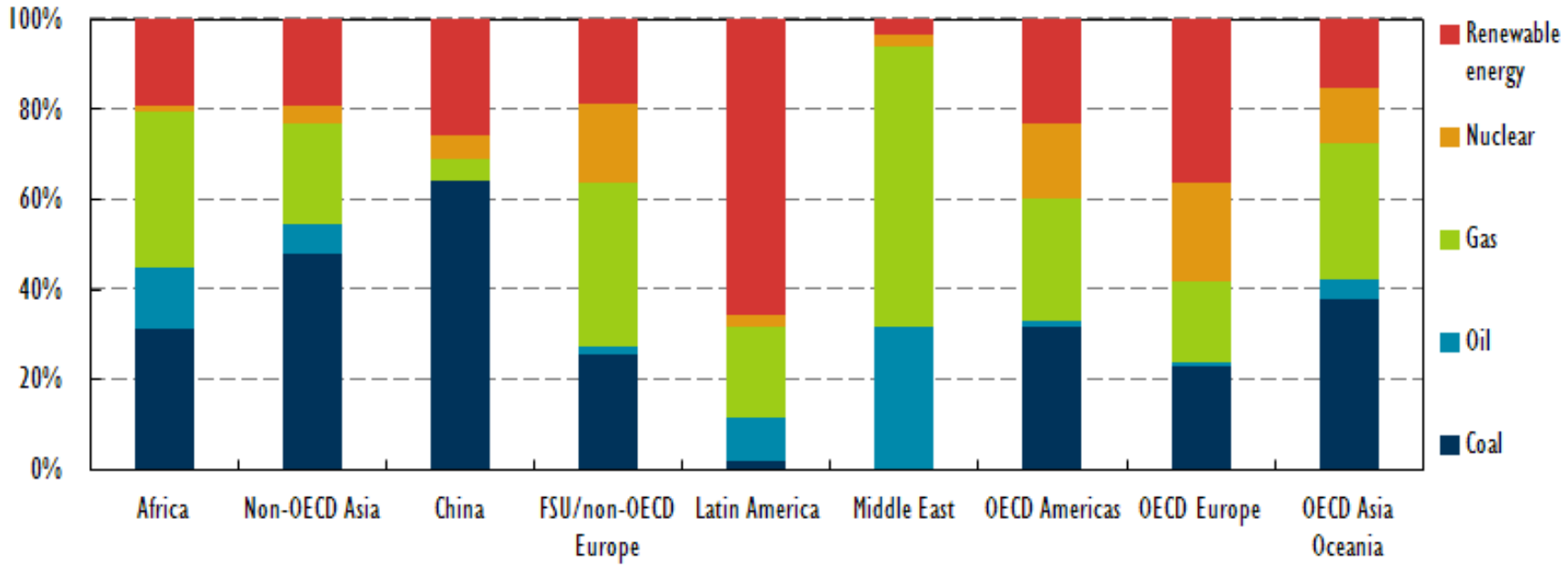
Incremental gas demand by region, 2013-19



- Gas demand is projected to grow by 490 bcm (2.2% per year) over 2013-19
- China is by far the largest contributor, followed by the Middle East
- Non-OECD regions provide 85% of the incremental gas demand growth

Power contributes to 53% of the demand growth

Power generation mix by region, 2019



- Gas demand in the power generation sector increases by 258 bcm over 2013-19
- 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

Air pollution issues encourages gas use in China

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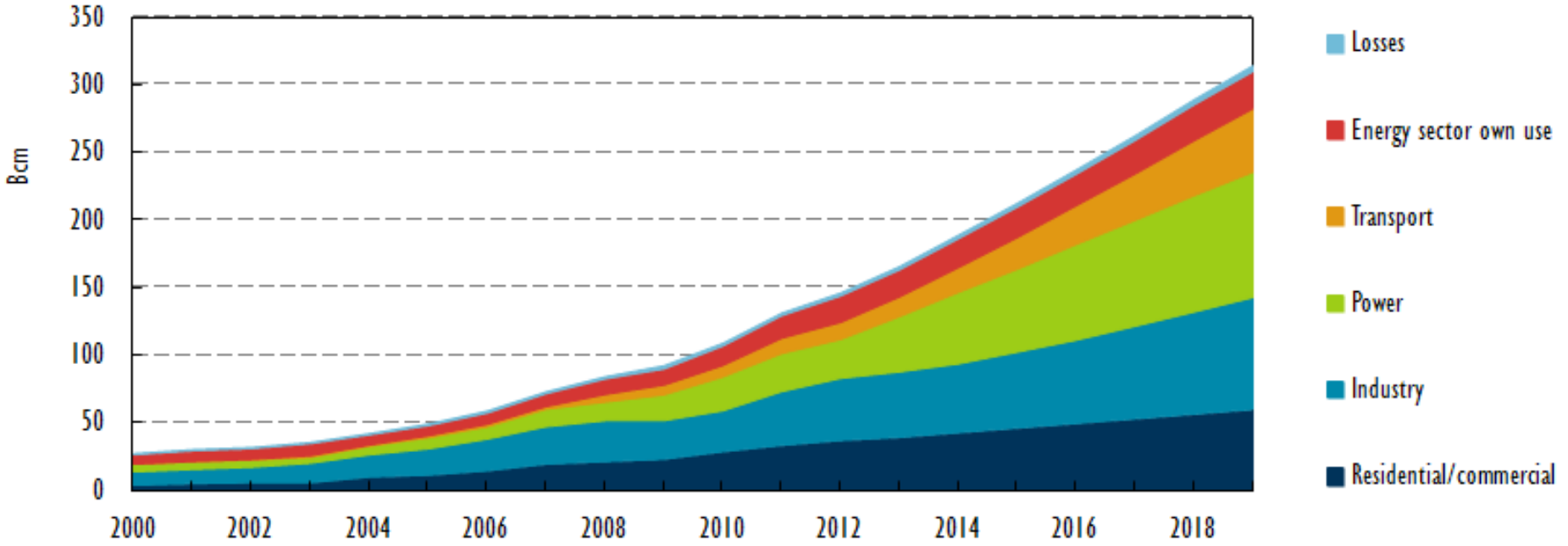
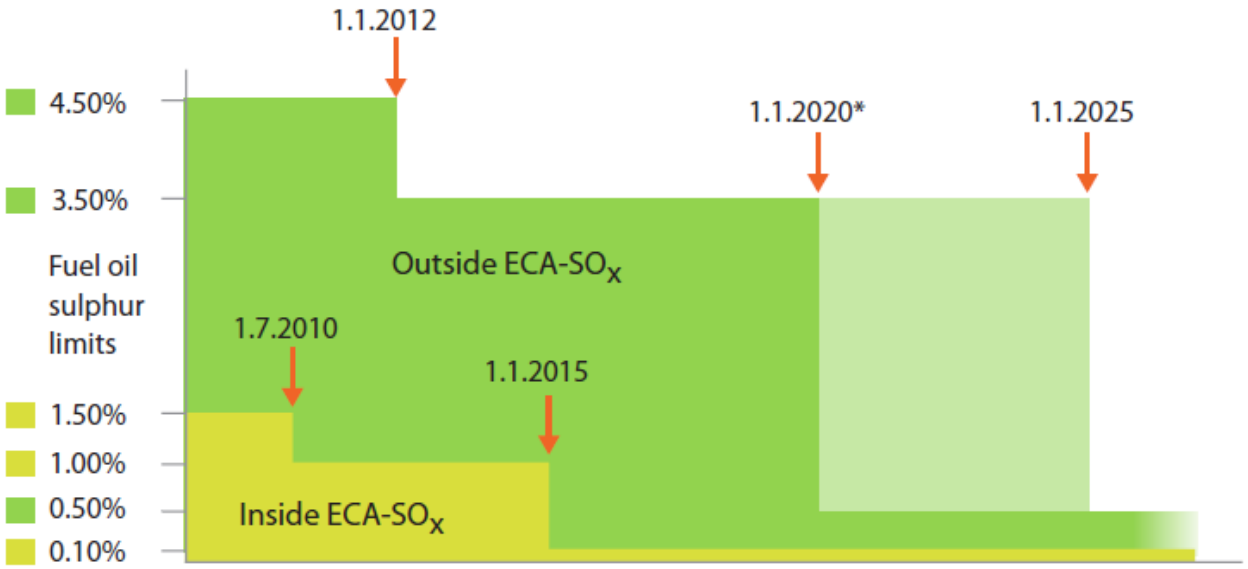
China's gas demand by sector, 2013-19



- **Gas demand in China will gain 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**

Use of gas in new areas

Sulfur limits according to MARPOL regulations



*Depending on the outcome of a review of fuel oil availability, to be completed 2018, the 2020 date could be deferred to 2025

- Gas use in road transport will double to 90 bcm by 2019
- Another sector is worth mentioning: maritime transport
  - 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

Two OECD regions contribute to 40% of the additional supply

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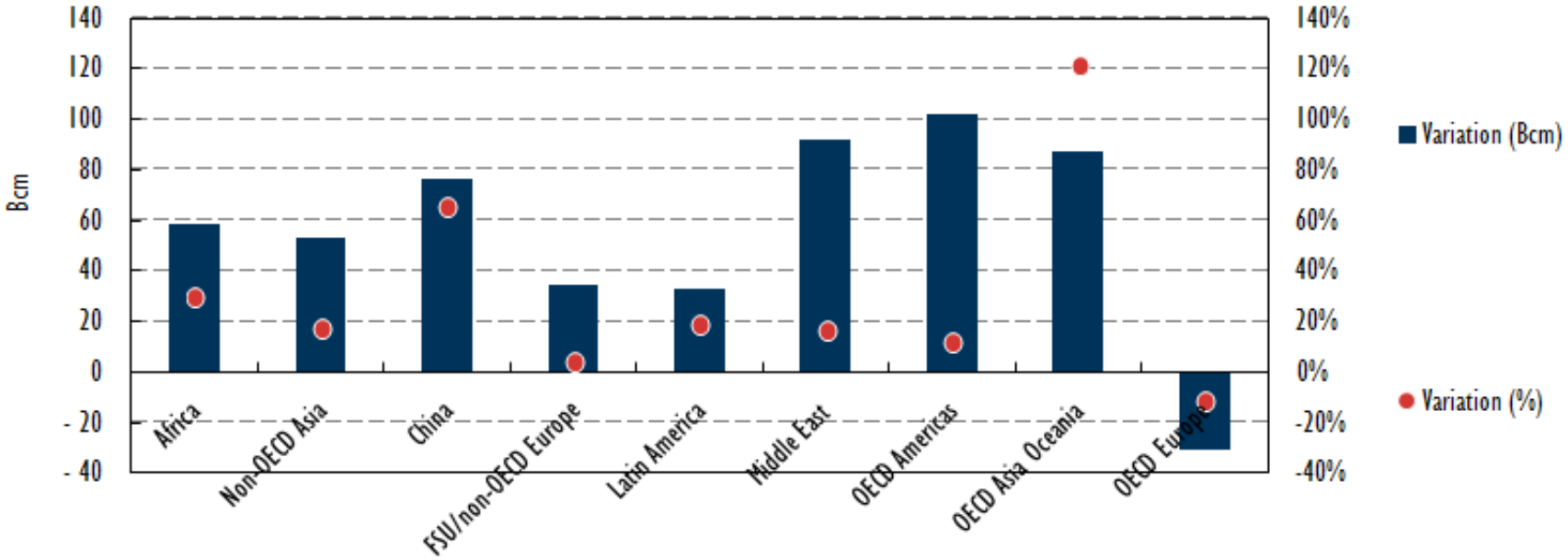
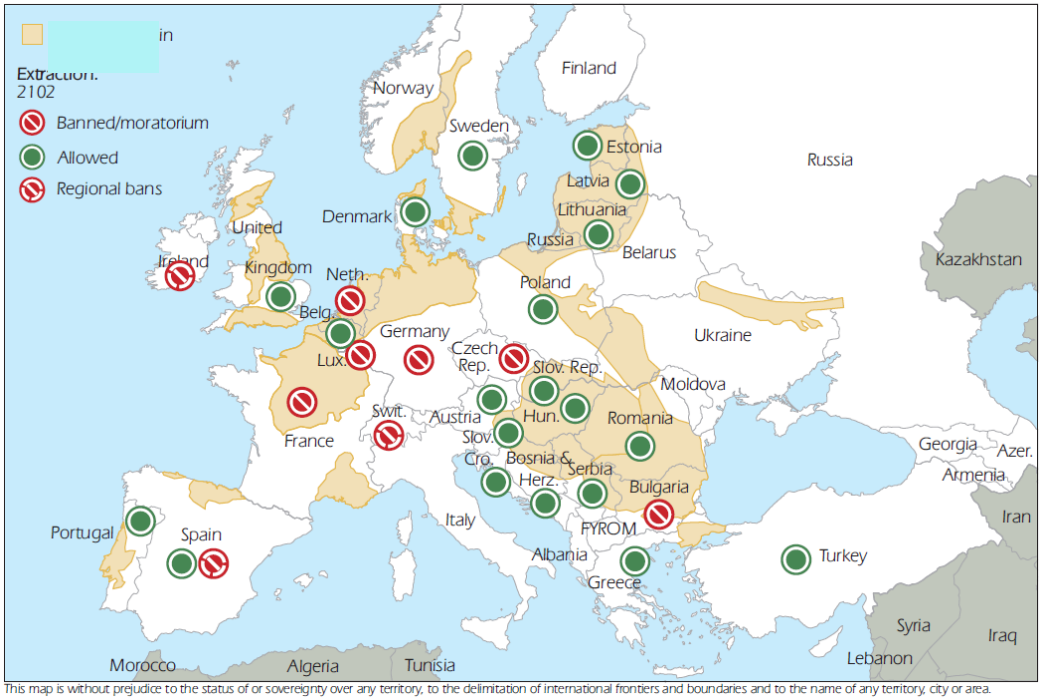
Incremental gas supply, 2013-19



- OECD Americas and Asia Oceania will represent 40% of additional supply
- China's gas output grows by 65%, but meets only half of new demand
- 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)

Unconventional gas production still faces hurdles

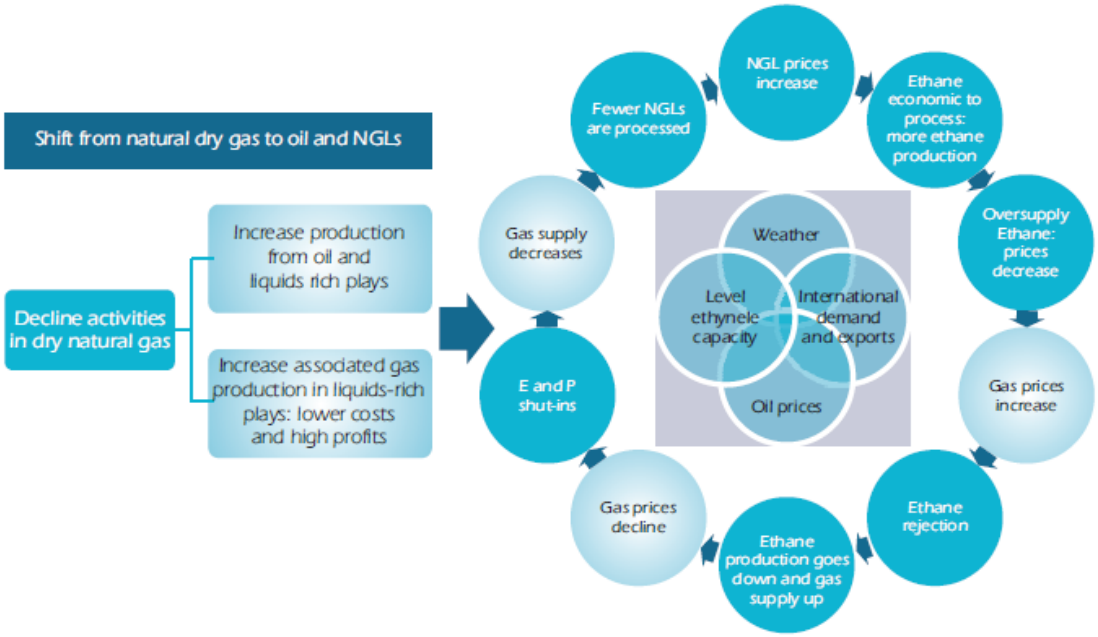


This map is without prejudice to the status of or sovereignty over any territory, to the delimitation of international frontiers and boundaries and to the name of any territory, city or area.

- Unconventional gas production represented 18% of global gas production as of 2013
  - 86% is located in North America
- 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

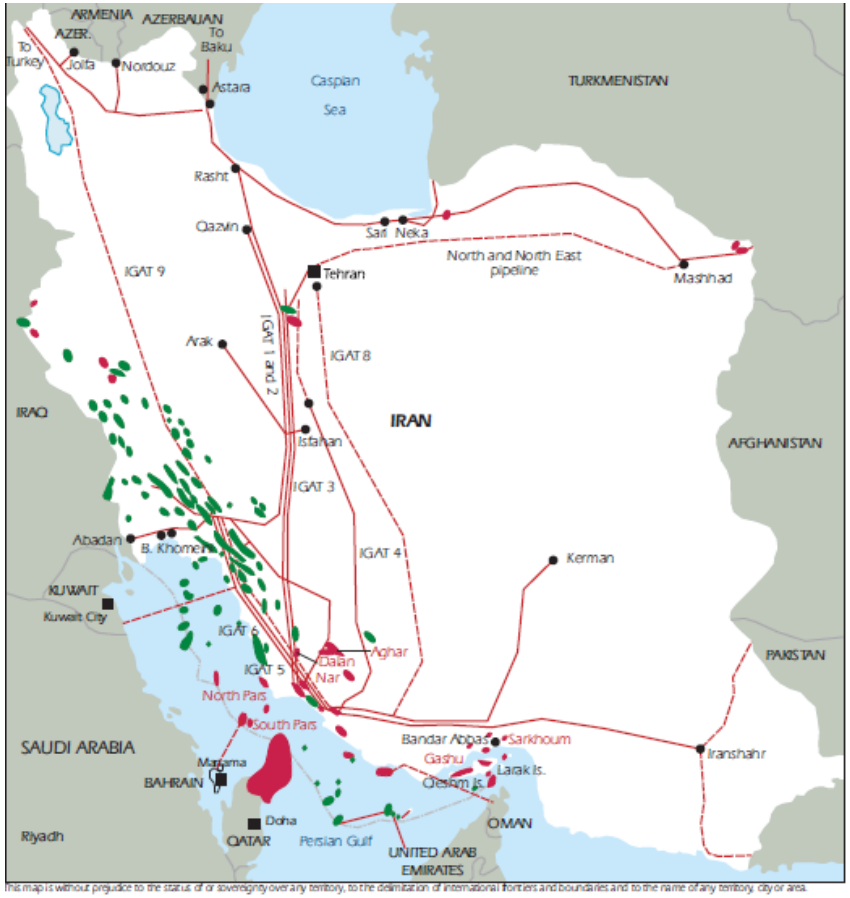
NGLs are a fundamental component of the US gas story

Interaction between the production of ethane and natural gas in liquids-rich plays



- **Traditionally, NGLs were considered by-products of gas production**
- **But due to low natural gas prices in the US, gas has gone from being the main product to the position of co-product**
- **Liquids-rich plays will largely contribute to determine the natural gas production levels of the forecast period**

Could Iran come back to the global gas scene?



- The country holds significant gas reserves, but is also facing major issues such as run-away demand, subsidised gas prices, international sanctions and unattractive contracts' terms
- Pipeline exports are possible within the decade, but LNG is still a decade away

150 bcm of LNG export capacity under construction

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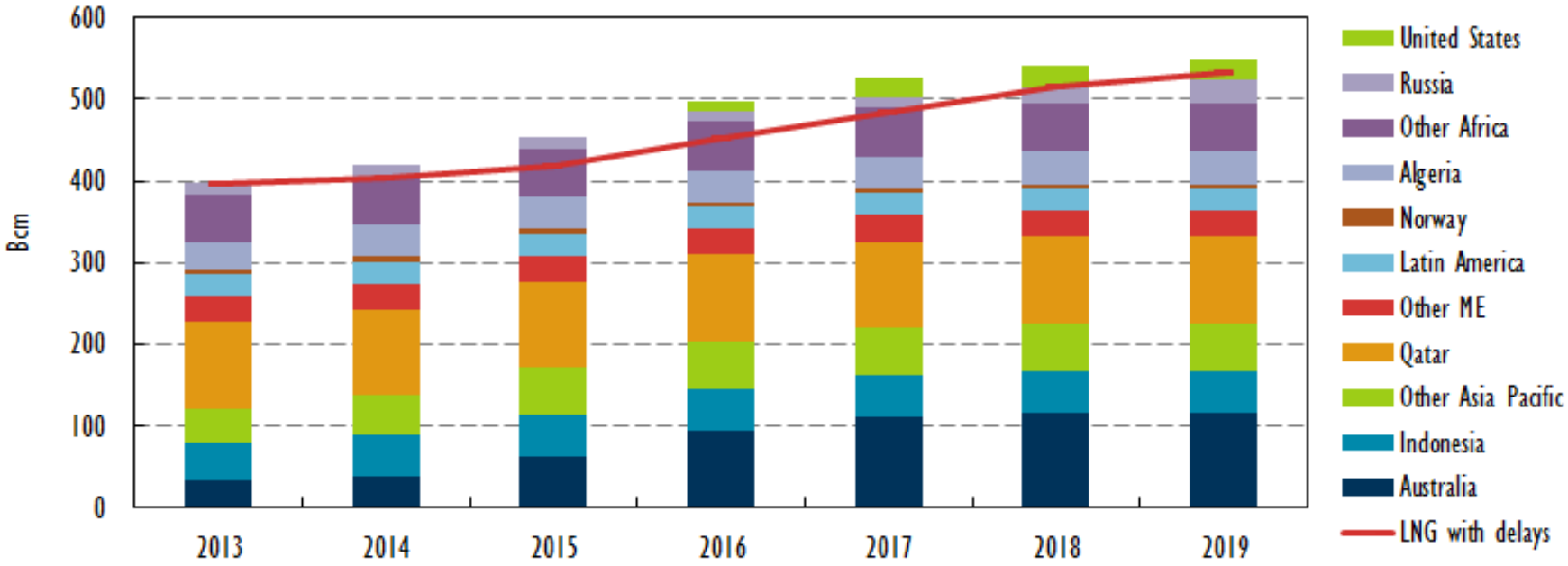
LNG liquefaction capacity, existing and under construction



- A new wave of LNG supply has already started with Papua New Guinea
- Only one US LNG project is currently under construction (Sabine Pass), while six projects have won DOE's authorisation to export to non-FTA countries

Most of the new LNG will be consumed by Asia

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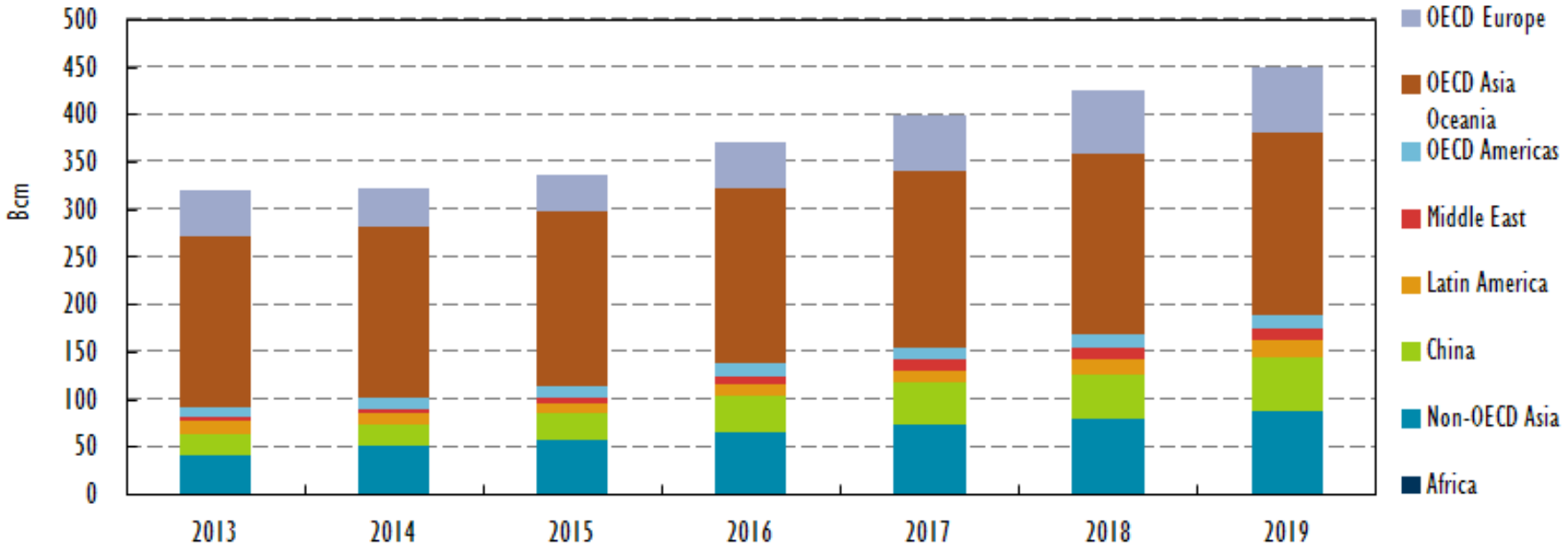
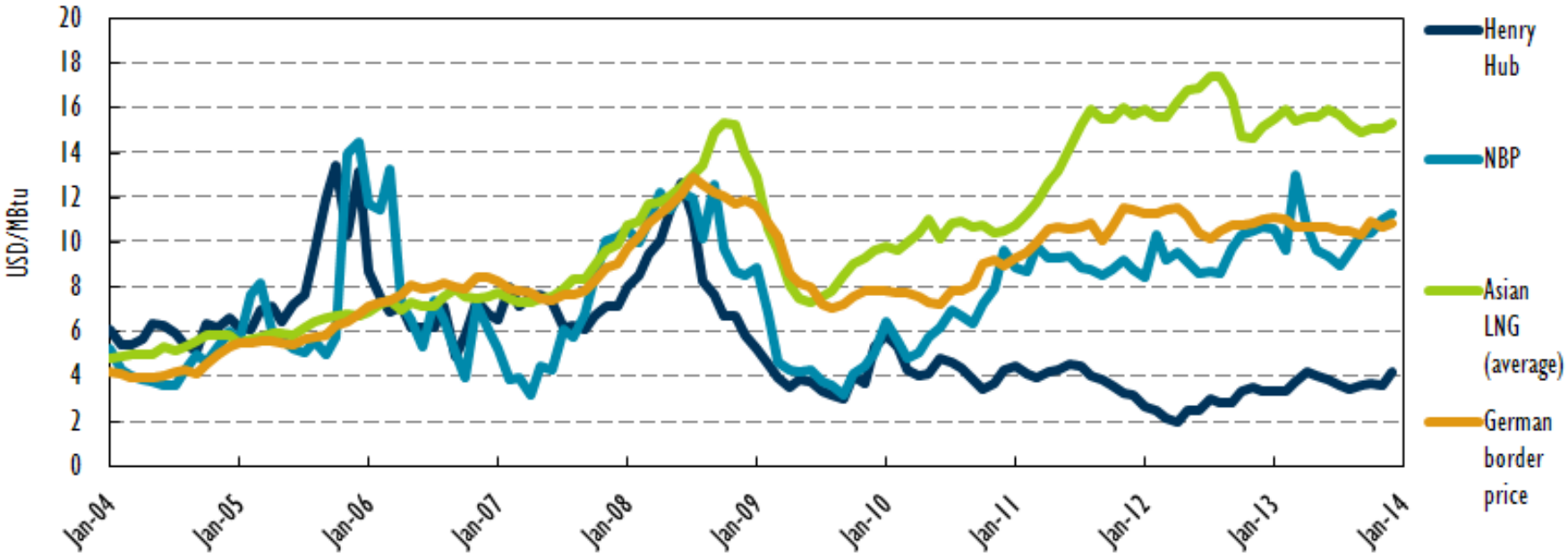
LNG imports, 2013-19



- Global LNG trade will amount 450 bcm in 2019, against 320 bcm in 2013
- 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

Global gas prices, 2004-14



- Global gas prices are still diverging widely, with a $12/MBtu gap between US and Asian gas prices
- 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
- 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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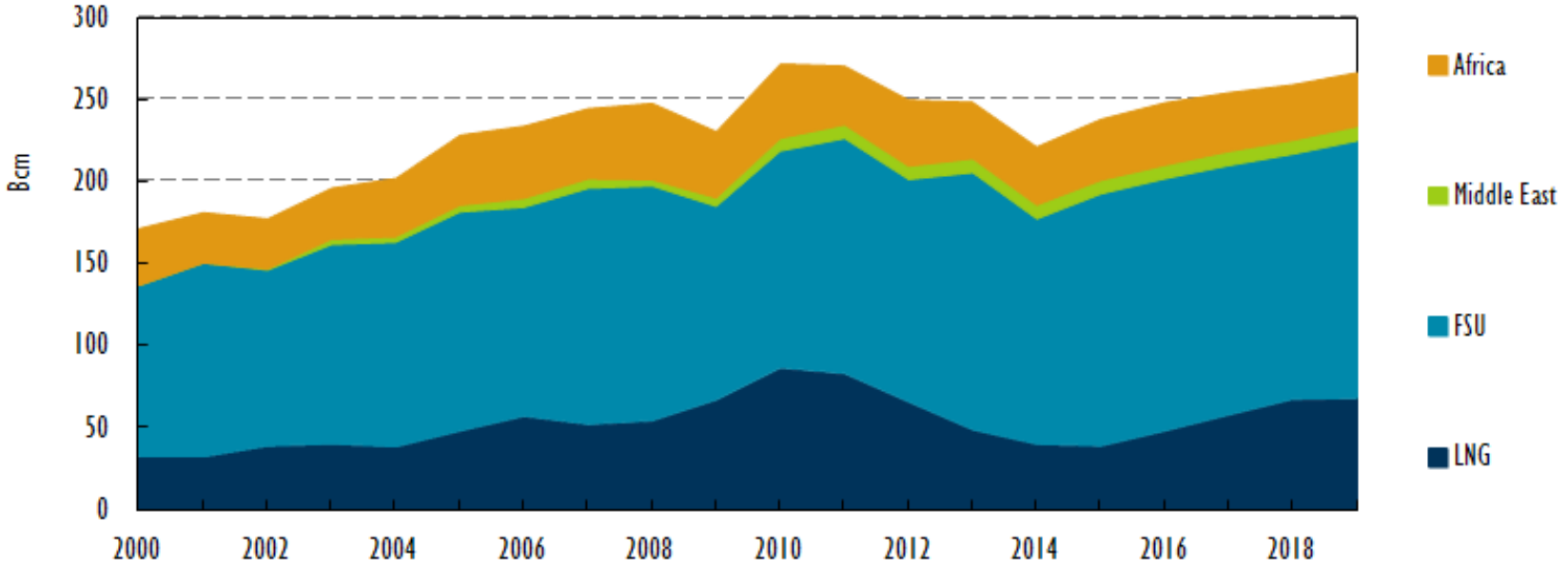
European gas imports, 2000-19



- 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

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Thank you for your attention