

Global Energy Trends

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Agenda

- **Quick introduction to IHS Markit**
- **Some mega-trends**
- **Implications for LPG**

IHS Markit: Addressing strategic challenges with interconnected capabilities

~14,000 colleagues
worldwide

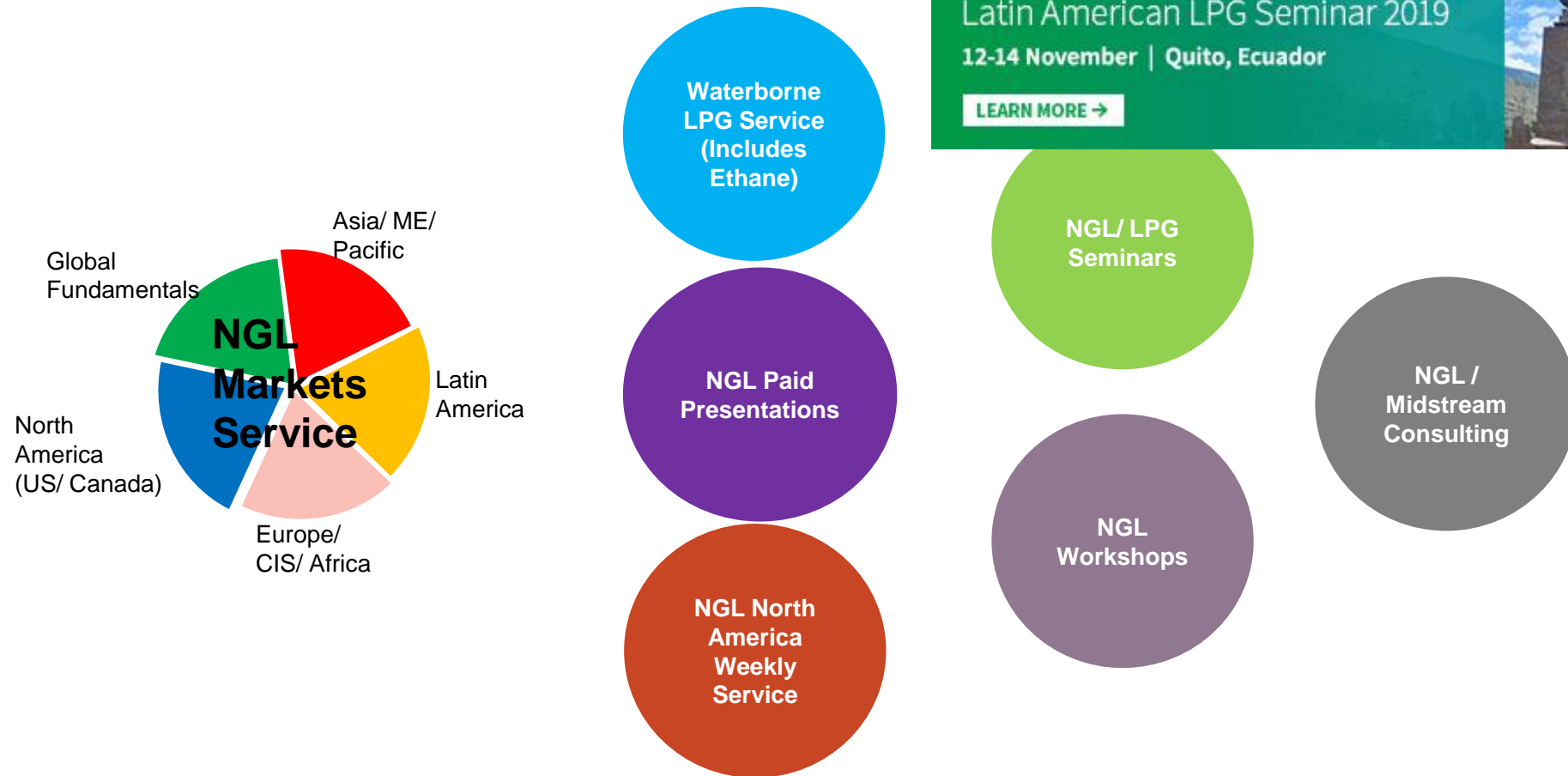
>120 offices across
the globe

~50,000 customers in
140+ countries

80% of the Fortune
Global 500

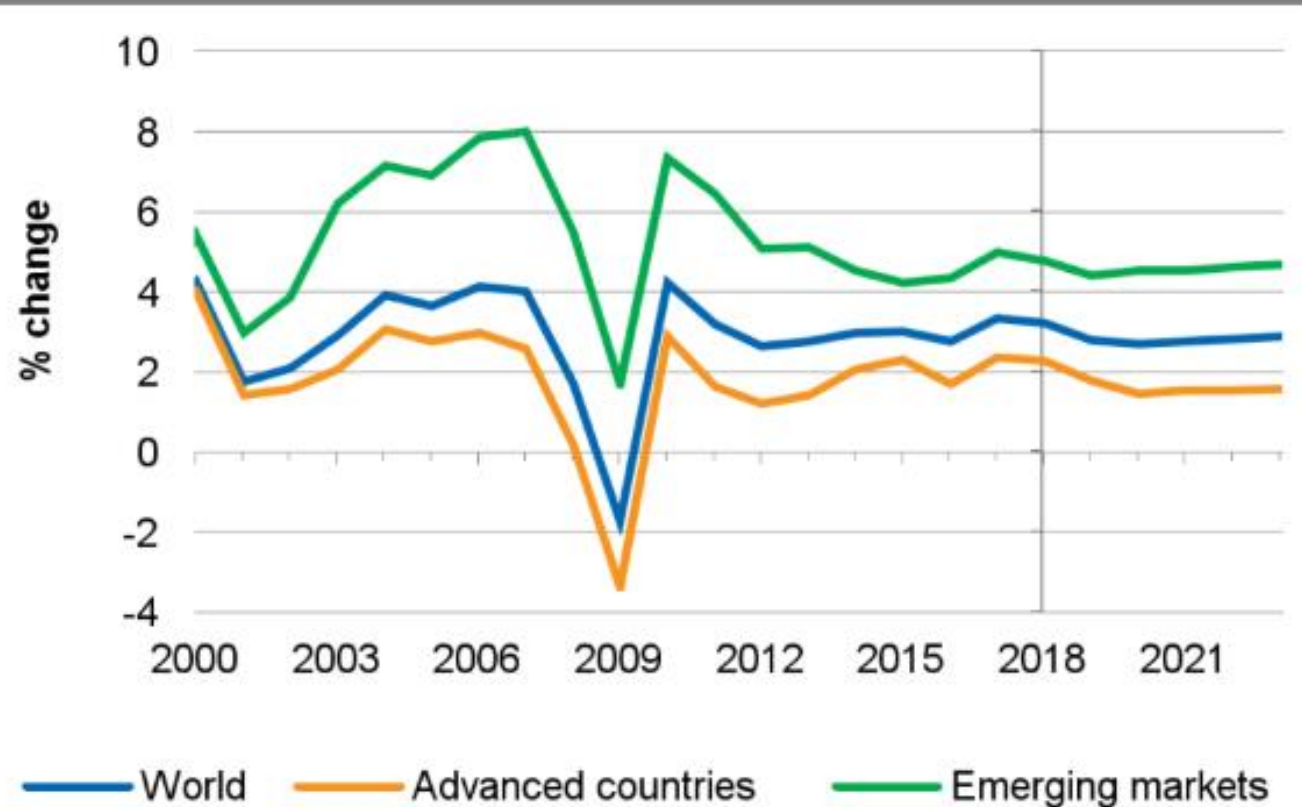


The IHS Markit Midstream Oil & NGLs Group delivers a wide array of products and services



Global economic growth is slowing

Real GDP growth is slowing in advanced countries and emerging markets



Source: IHS Markit

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- Demand for refined products is driven by the health of the global economy
- Trump tariffs are slowing global trade – but especially US / China
- Risk of global recession has increased
 - China shadow banking; highly leveraged companies
 - Brexit – October 31?
 - US tax cuts without spending cuts; Trump pressuring the Fed to lower rates
 - Italy sovereign debt crisis
 - Venezuela depression
 - Argentina recession

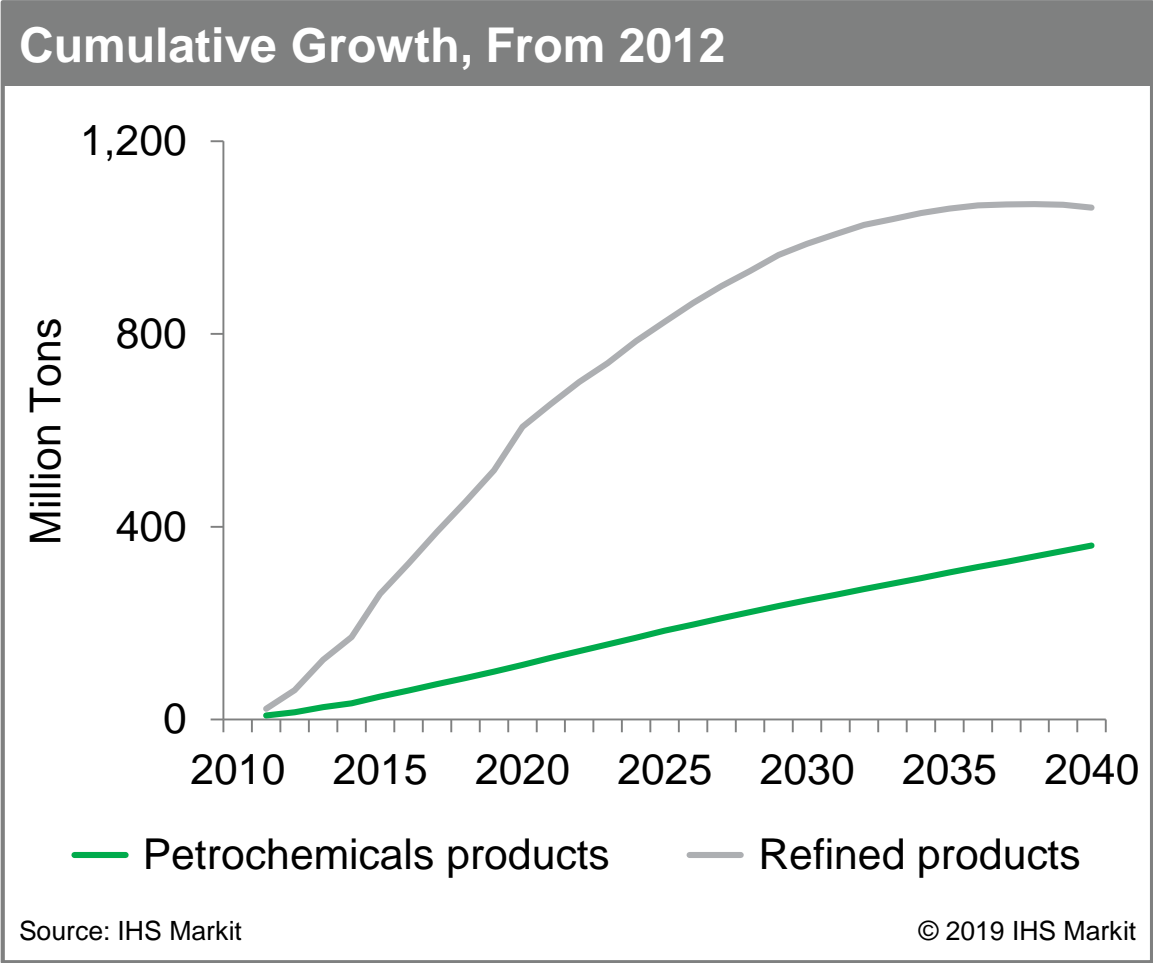
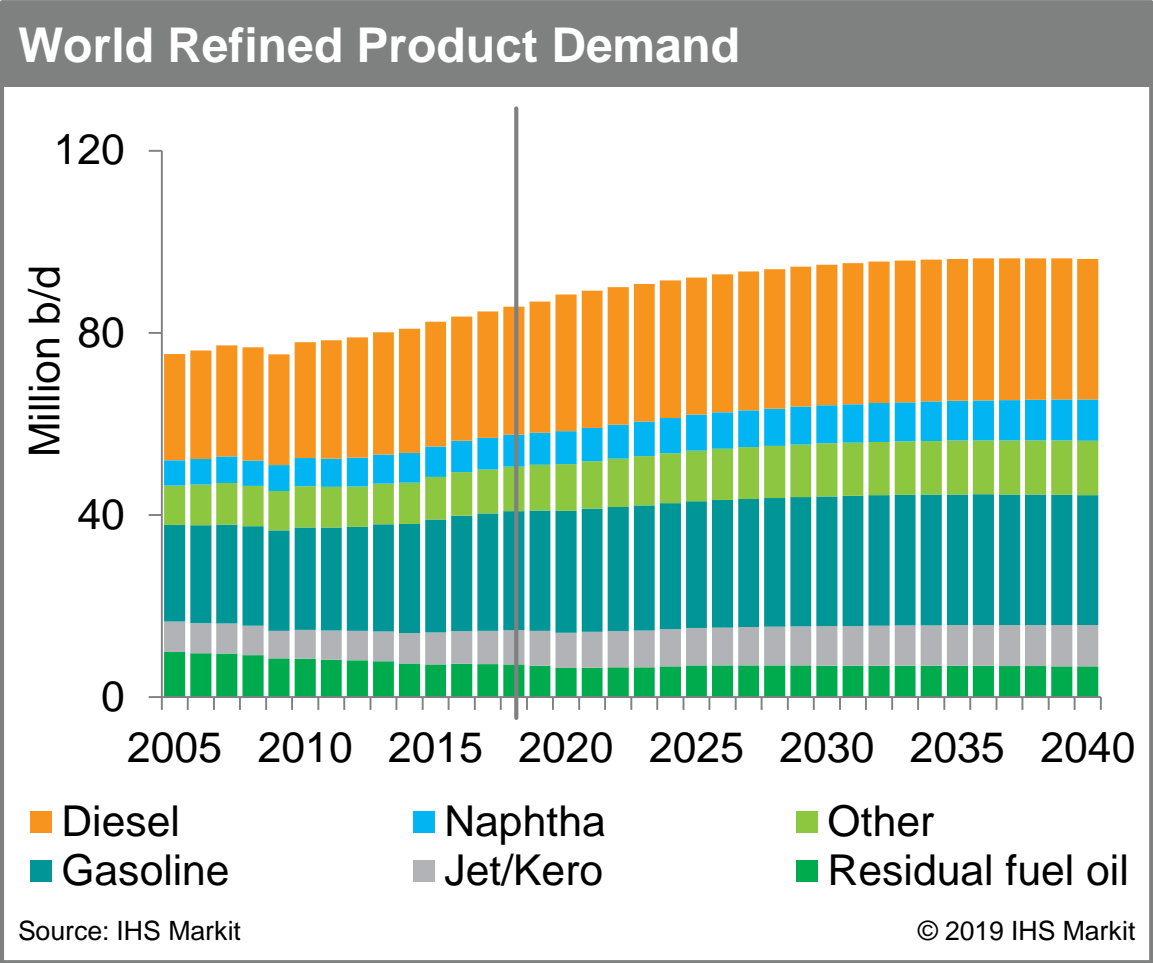
Populists have increasingly gained control of globally influential countries

Populism* tenets:

1. The “true people” of a country are locked in crises with “outsiders”
2. Nothing should constrain the will of the true people

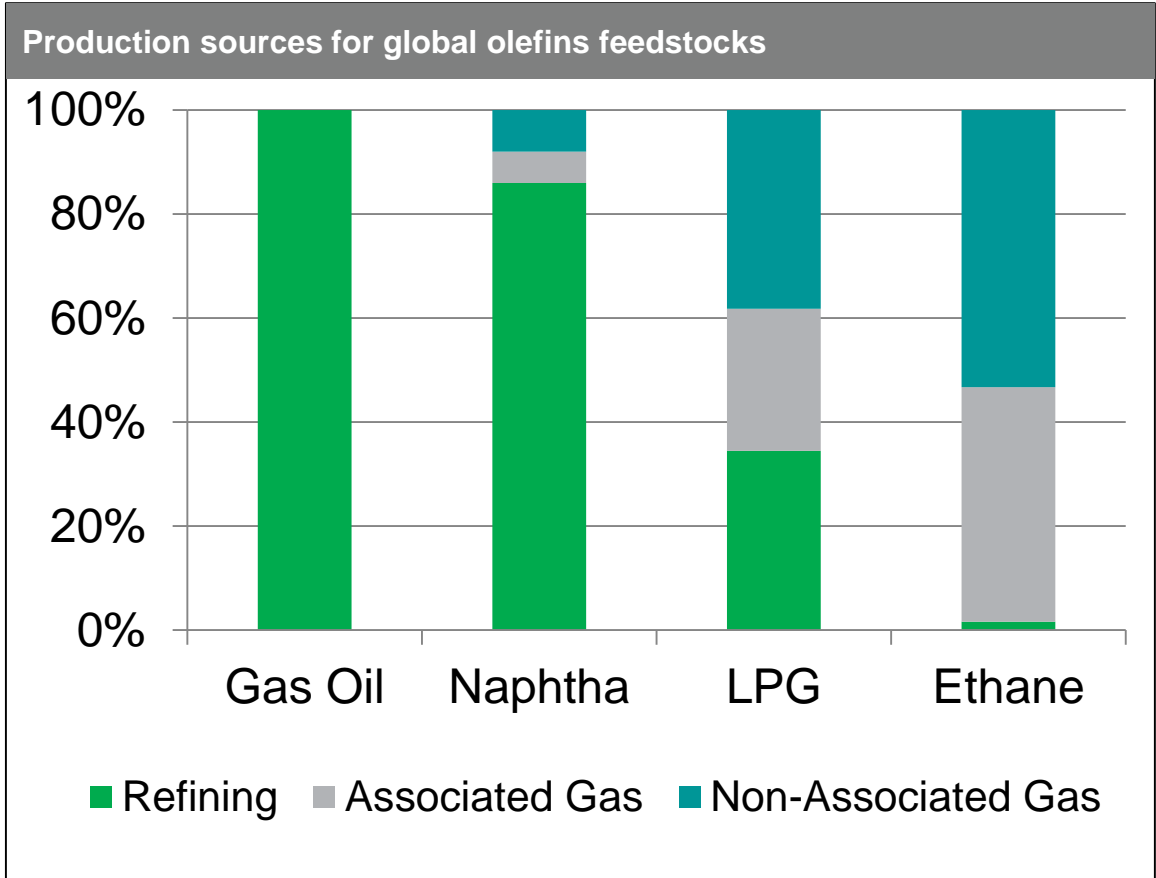
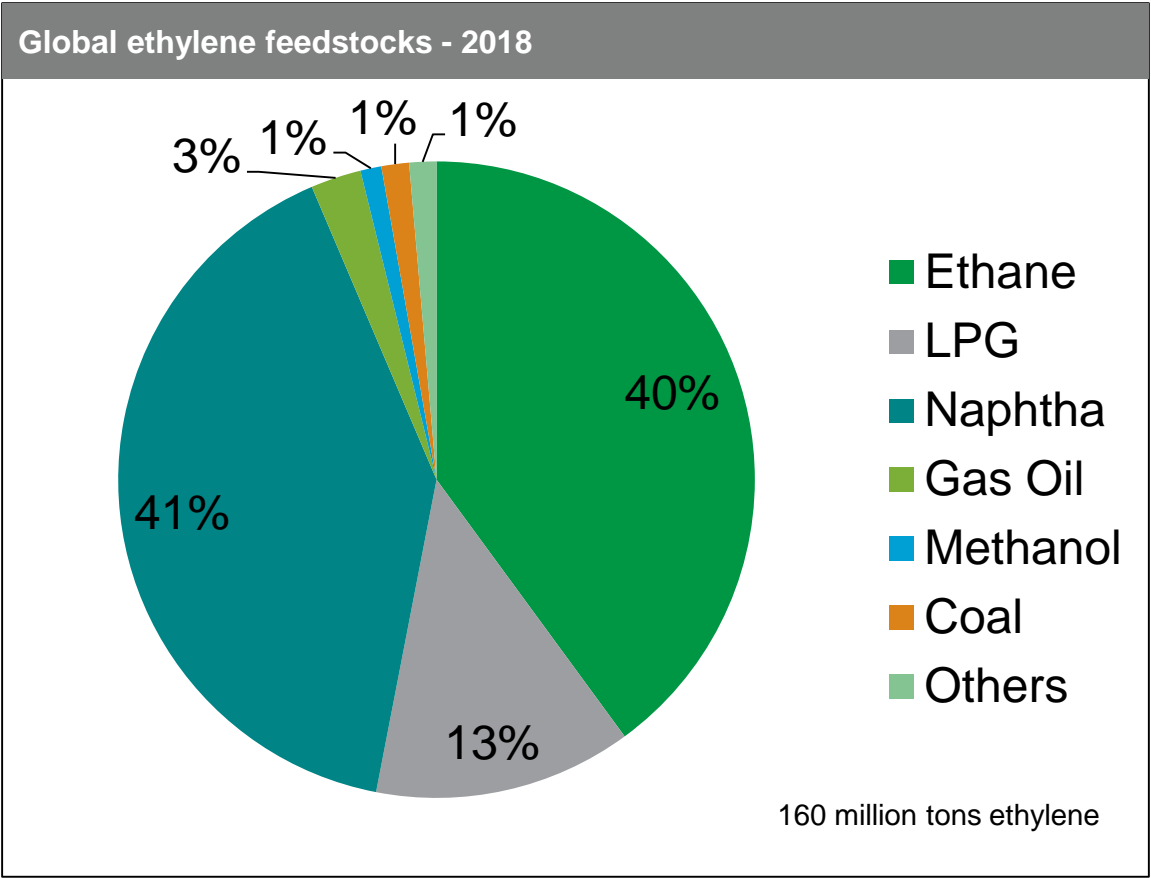
Country	Leader**	Tenure
United States	Donald Trump	2016+
Great Britain	Boris Johnson	2019+
Russia	Vladimir Putin	2000+
Argentina	Kirchners	2003-15; Fernandez 2019??
Bolivia	Evo Morales	2006+
India	Narendra Modi	2014+
Indonesia	Joko Widodo	2014+
Israel	Benjamin Netanyahu	1996-99; 2009+
Philippines	Rodrigo Duterte	2016+
Turkey	Recep Erdogan	2003+
Venezuela	Nicolas Maduro	2013+
Mexico	Andres Manuel Lopez Obrador	2018+
Brazil	Jair Bolsonaro	2019+

Petrochemicals demand is expected to continue to grow steadily but refined products demand will peak around 2030 – impacted by biofuels, vehicle efficiency improvements and electrification



Petrochemical products include: ethylene, propylene, benzene, paraxylene

Most olefins feedstocks are directly or indirectly dependent on refined product demand via refinery byproducts or associated gas – incremental naphtha will become scarce



Refiners are already adjusting their product yields toward chemicals and jet fuel

Reliance to produce only jet fuel, petrochemicals at Jamnagar after oil-to-chemical strategy

The company is preparing its Jamnagar complex, the world's largest refinery at a single location, to be future ready as fuel demand undergoes change with advent of electric vehicles.

PTI | Updated: Aug 12, 2019, 12.13 PM IST



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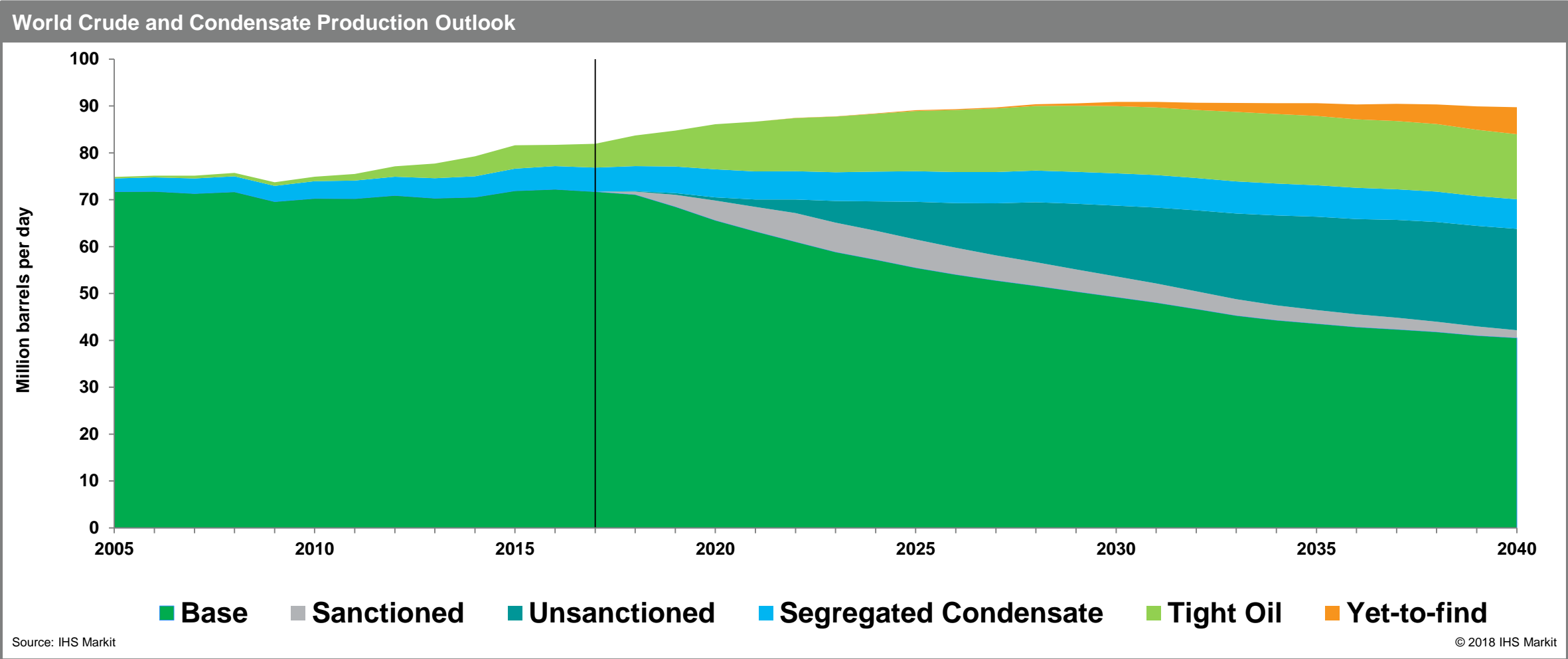


Reliance to sell 20% stake in oil to chemicals business to Saudi Aramco

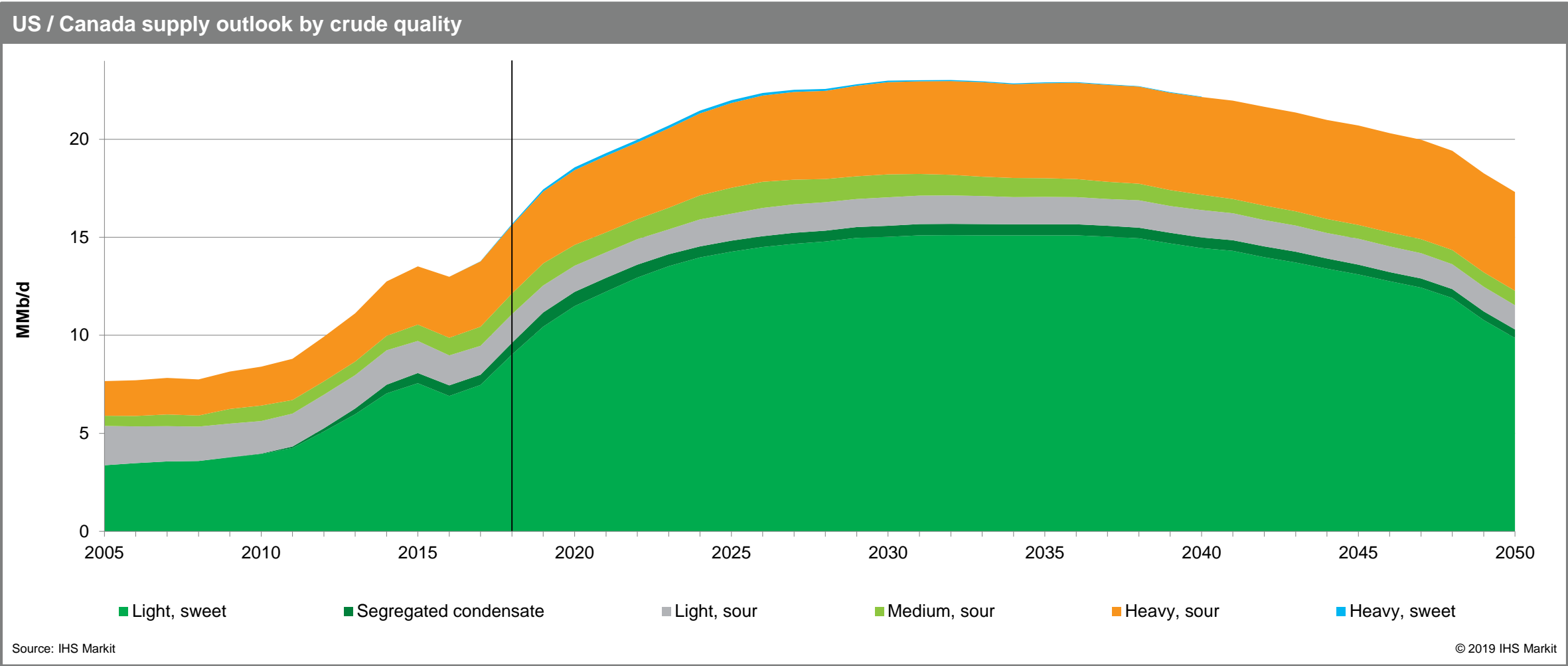
NEW DELHI: Billionaire Mukesh Ambani's [Reliance Industries Ltd](#) NSE -0.80 % plans to produce only jet fuel and petrochemicals at its mega [Jamnagar](#) refinery complex as it implements an oil-to-chemical strategy that will eliminate most fuels it produces in favour of high value products.

The company is preparing its Jamnagar complex, the world's largest refinery at a single location, to be future ready as fuel demand undergoes change with advent of electric vehicles.

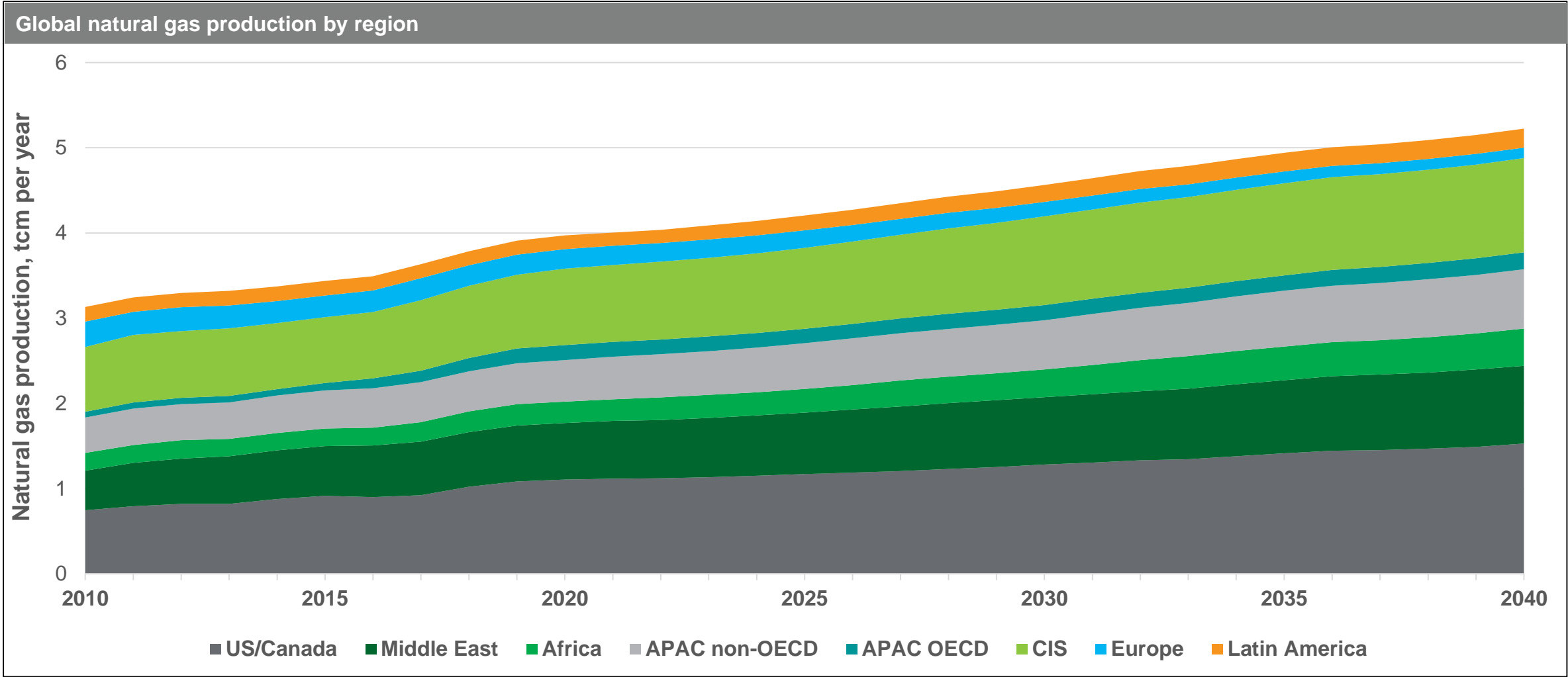
A peak in refined products demand will result in a peak in crude oil production



US / Canada crude / condensate supply will peak around 2030 owing to maturation of unconventional oil plays

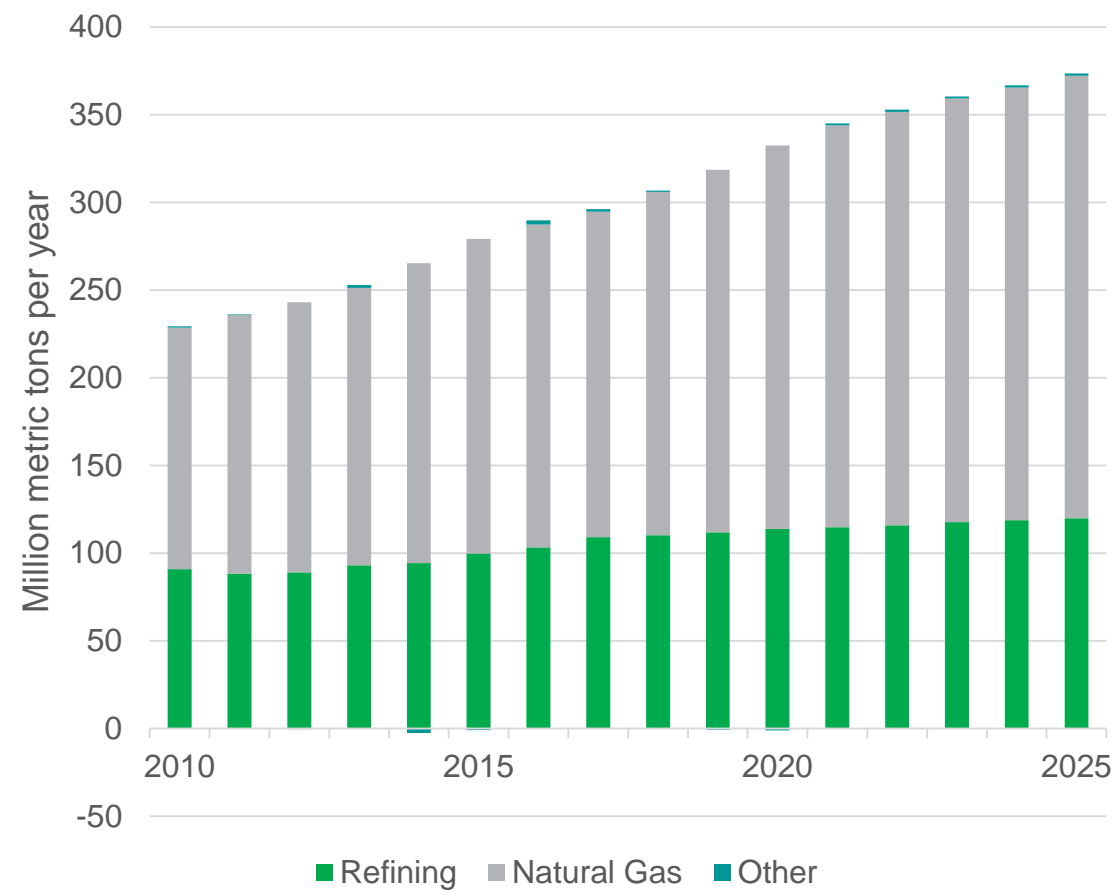


Global natural gas demand will increase steadily – the US EIA estimates that the US has about 80 years of natural gas reserves

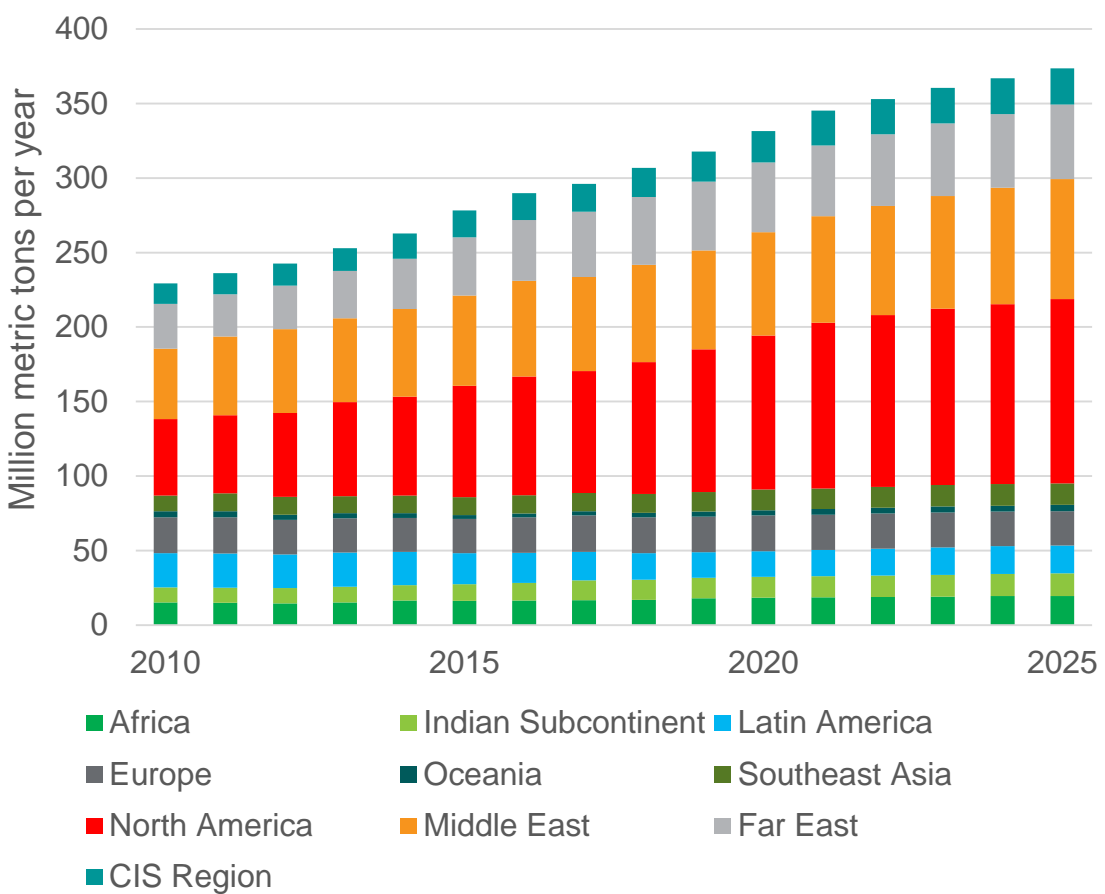


Global LPG supply will be driven by increasing production of non-associated natural gas, while LPG supply from refining and associated gas will level off

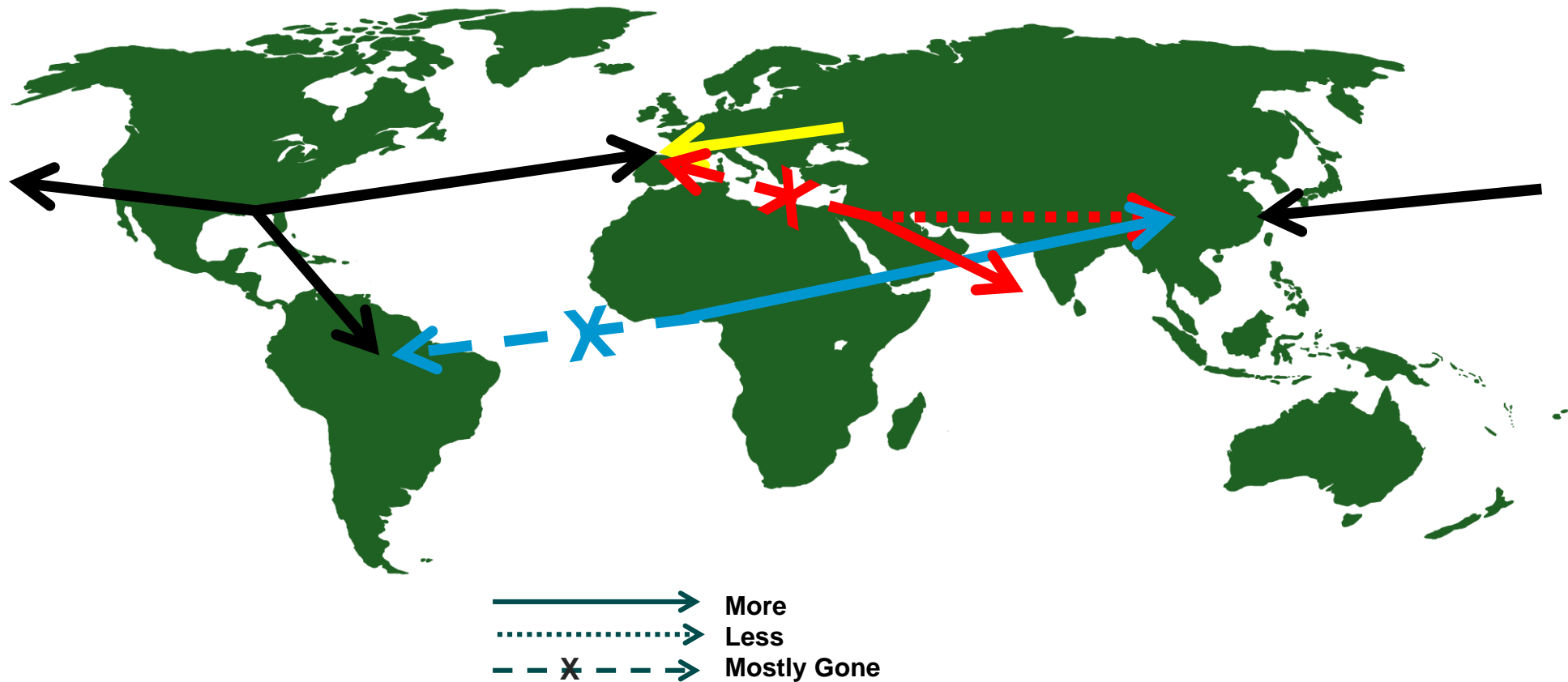
Global LPG Production by Source



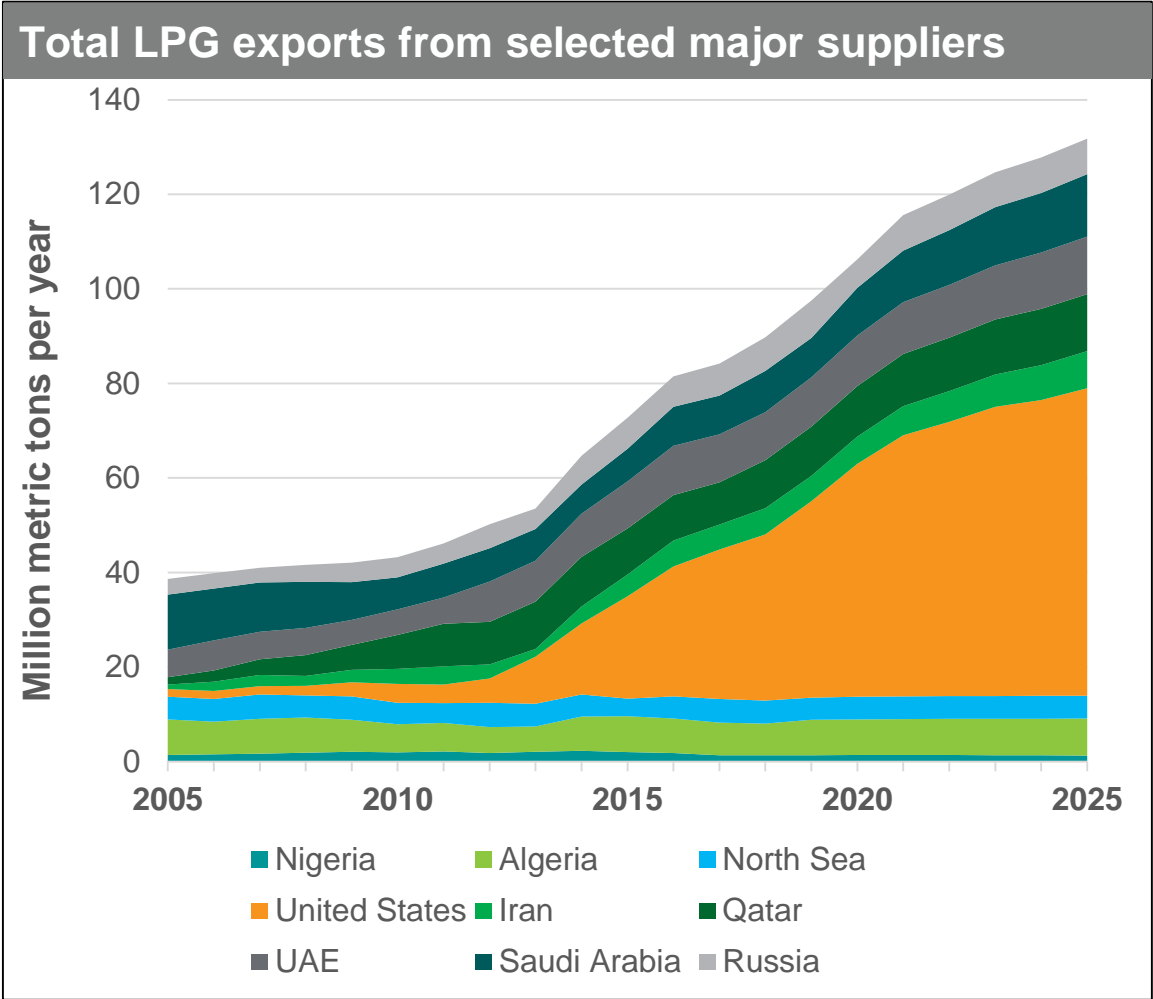
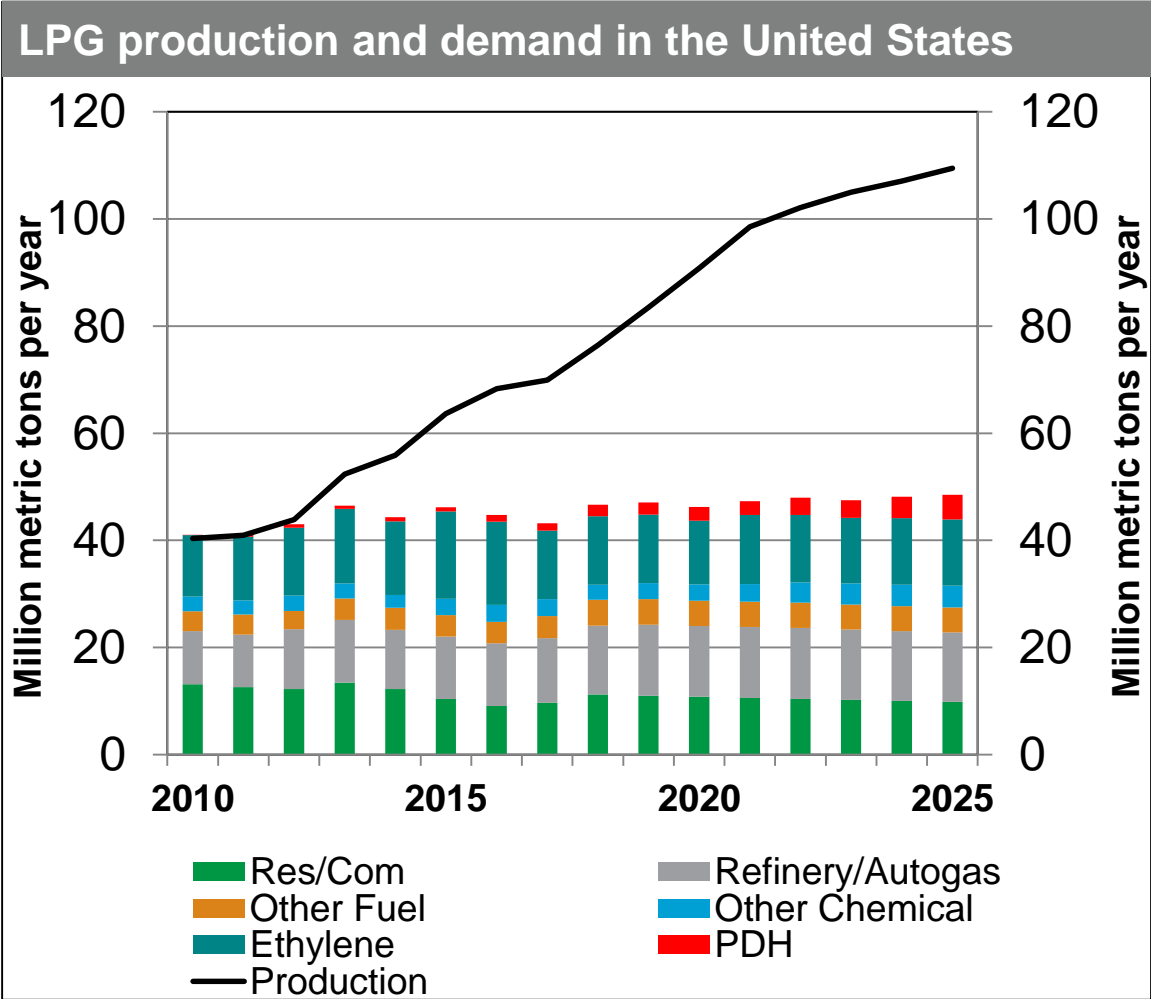
Global LPG Production by Region



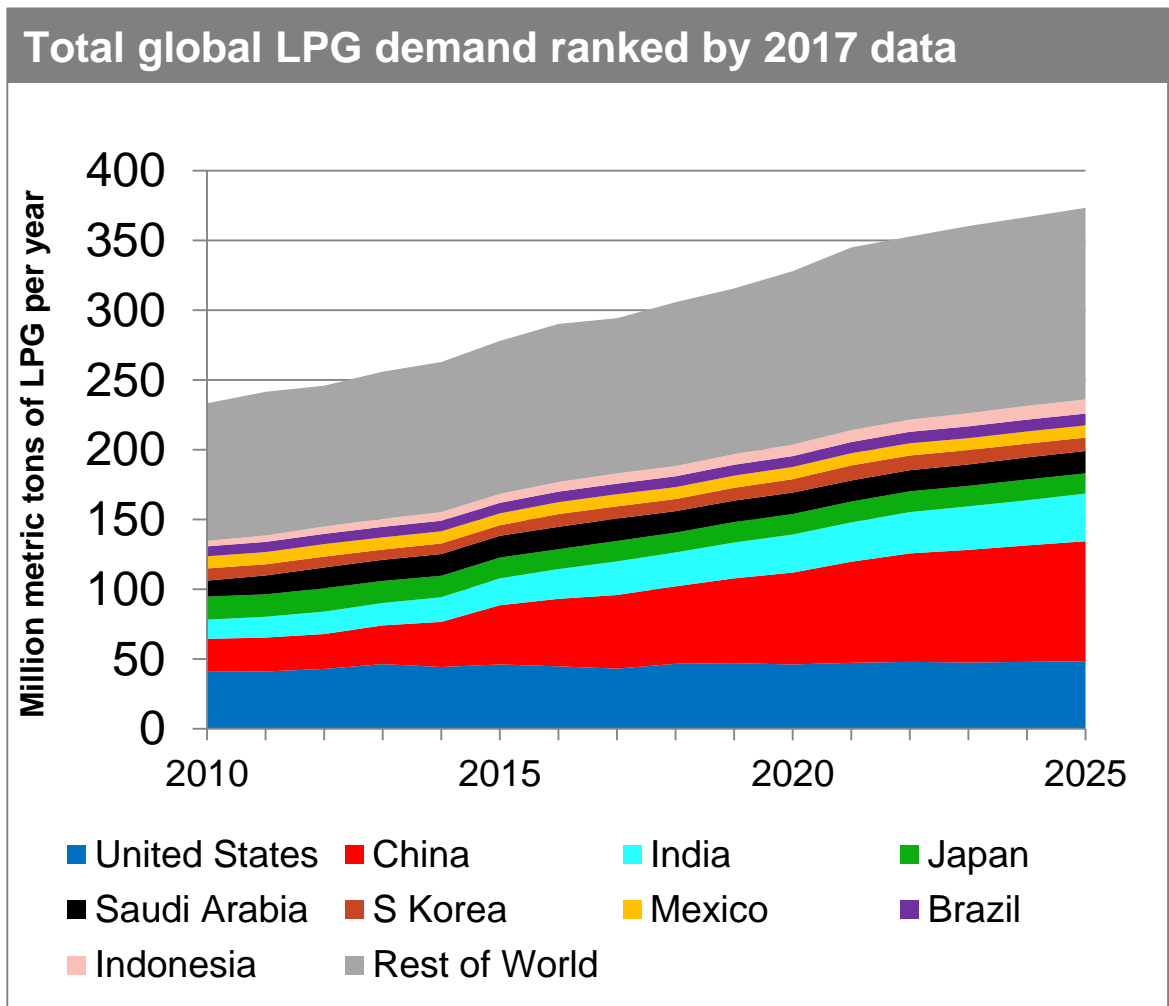
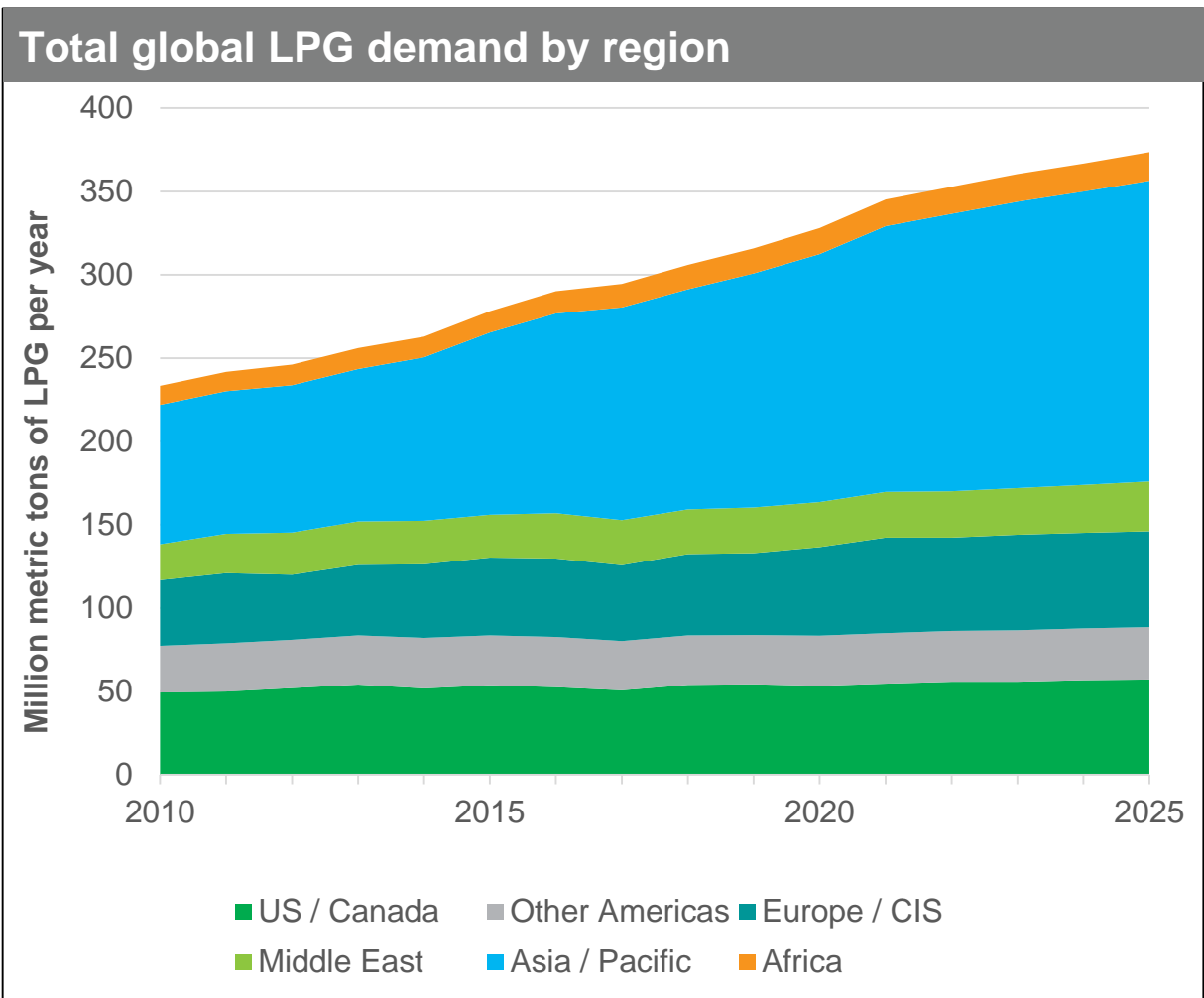
Dramatic increases in US exports have resulted in major changes in global LPG trade flows – incremental US exports have to move to Asia – now seeing US LPG exports in Southeast Asia and even India



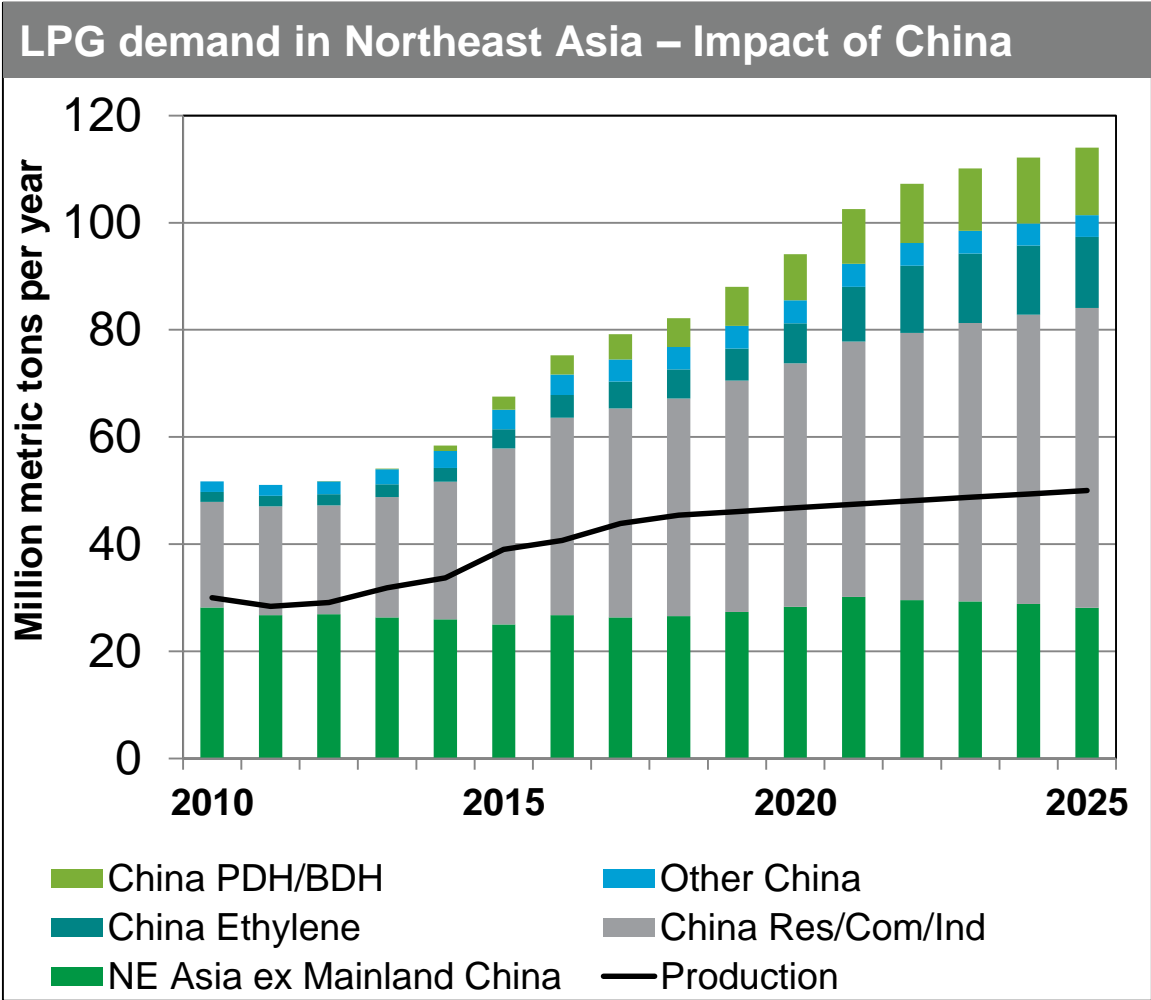
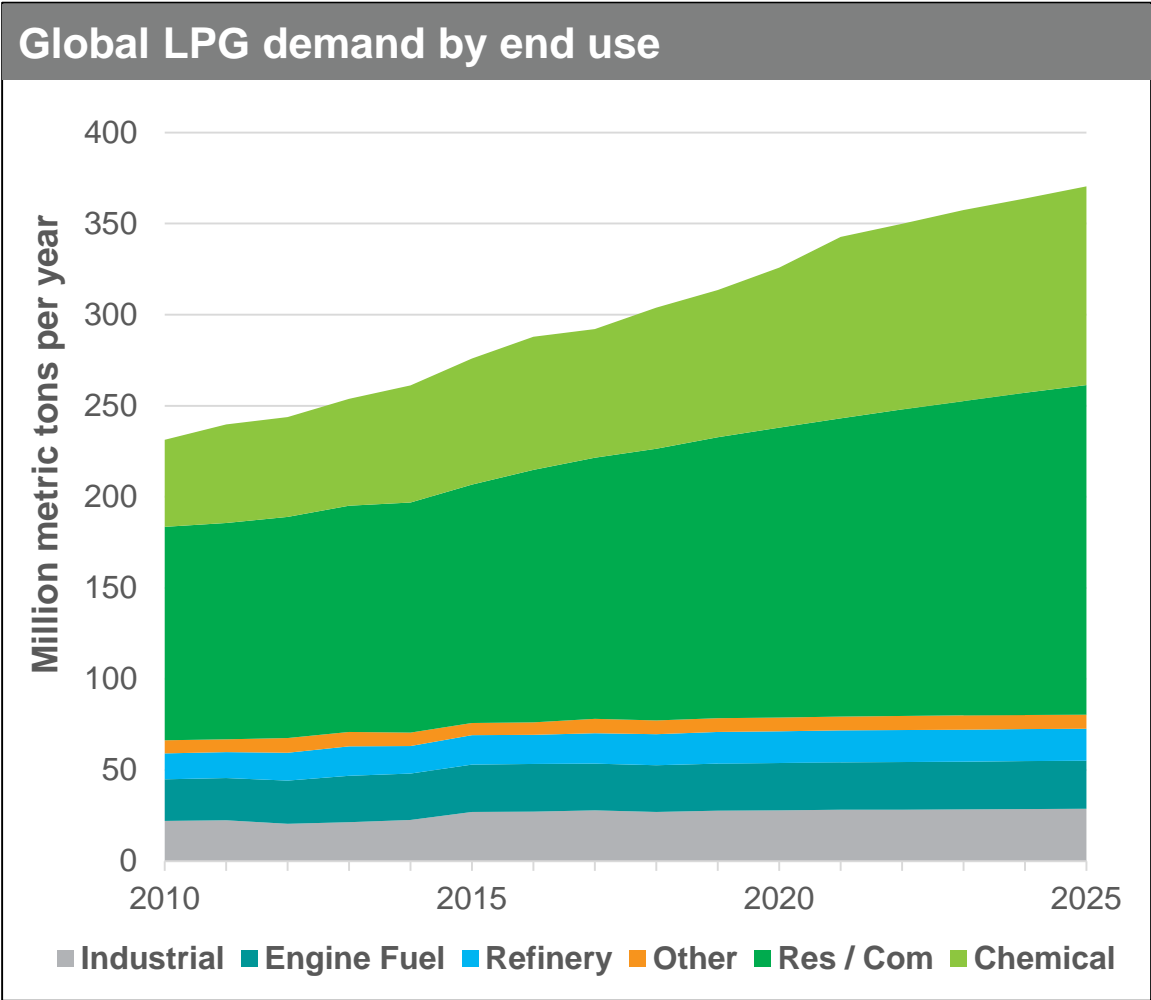
US LPG production will grow more slowly, but domestic demand has been nearly flat; the US will remain the world's largest LPG exporting country



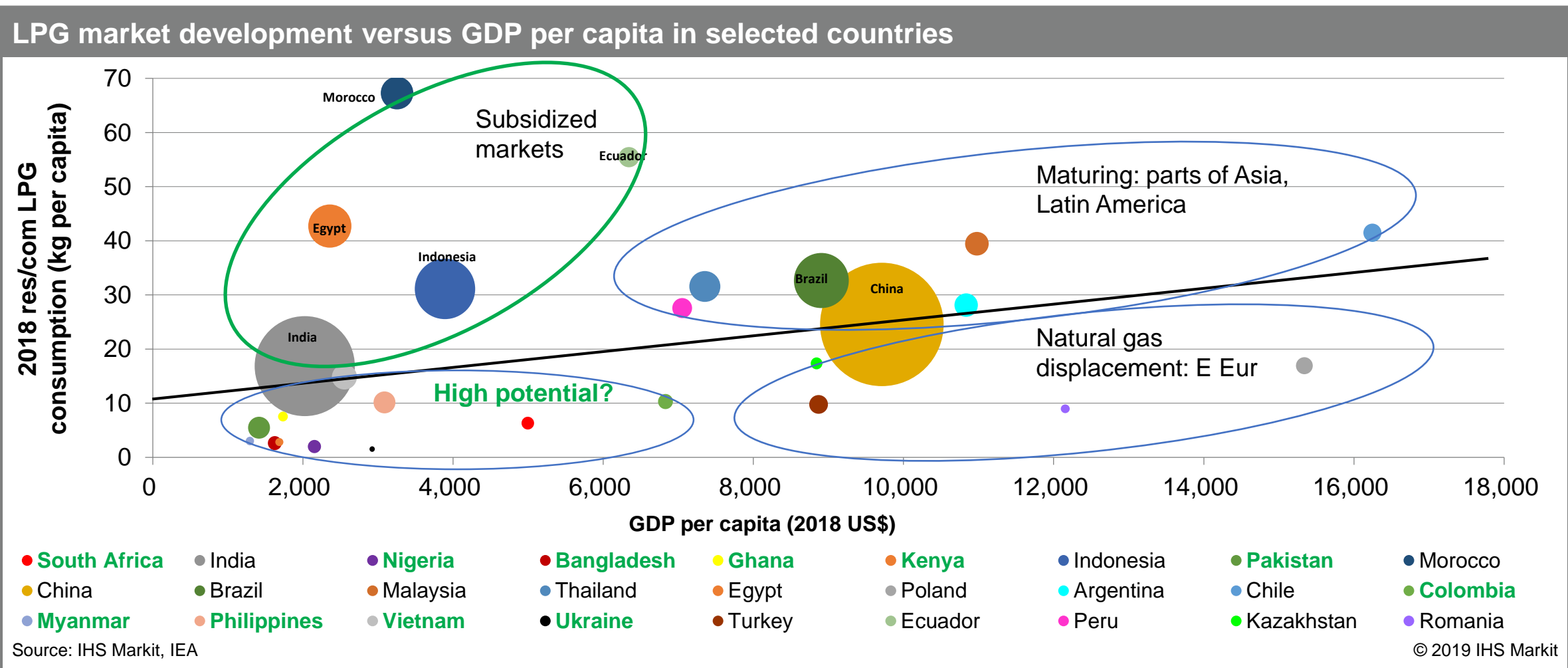
Global LPG demand growth will continue to be led by Asia



Residential / commercial LPG demand is growing steadily but feedstock flexible chemicals demand clears the market



Where will the next wave of res/com LPG demand arise?



Two potentially large new end use applications to watch...

LPG for bunker fuel

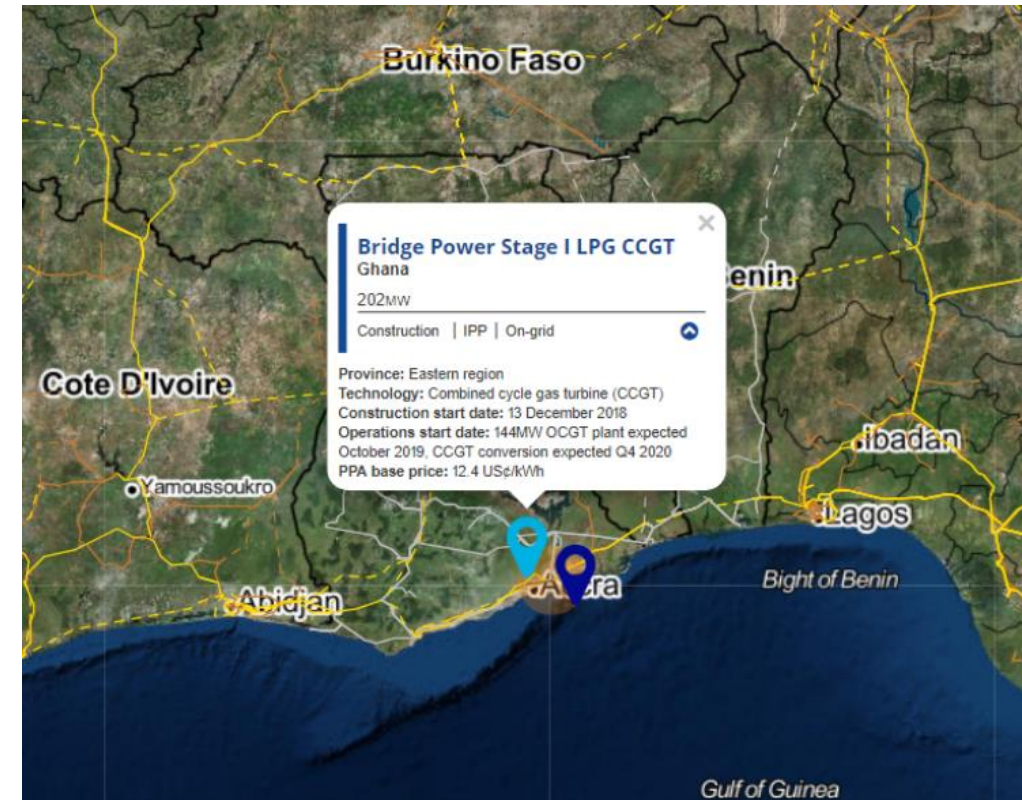
Example: Exmar – 2 newbuild VLGCs for Equinor time charter in 2021



~10,000 to 14,000 tpy per VLGC, depending on many factors

LPG for power generation

Example: Ghana Bridge Power Stage 1 demand: 281 kt for 202 MW (construction started)



Global trends to think about

Some mega-trends

- Global economies are slowing – increased risk of recession
- Climate change responses
- Populism – undermining global cooperation and democratic governance?
- Natural gas and petrochemical demand shows steady growth while refined products demand growth stalls
- Crude to chemicals

LPG trends

- LPG supply growth mainly from non-associated gas by-production
- Incremental LPG demand mostly from Asia
- Surplus LPG has to travel long distances over water
- Chemical feedstock demand will continue to clear the market – PDH could become the last increment

Thank You!

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