

IFRI/CGEMP

Etats-Unis: La nouvelle equation énergie/climat

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Compétitivité américaine avec l'essor des gaz de schiste

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US competitiveness linked to shale gas

- ❑ Effects on US energy and electricity mix
- ❑ Effects on energy independence (LNG and natural gas exports)
- ❑ Effects on US manufacturing (ethylene growth)

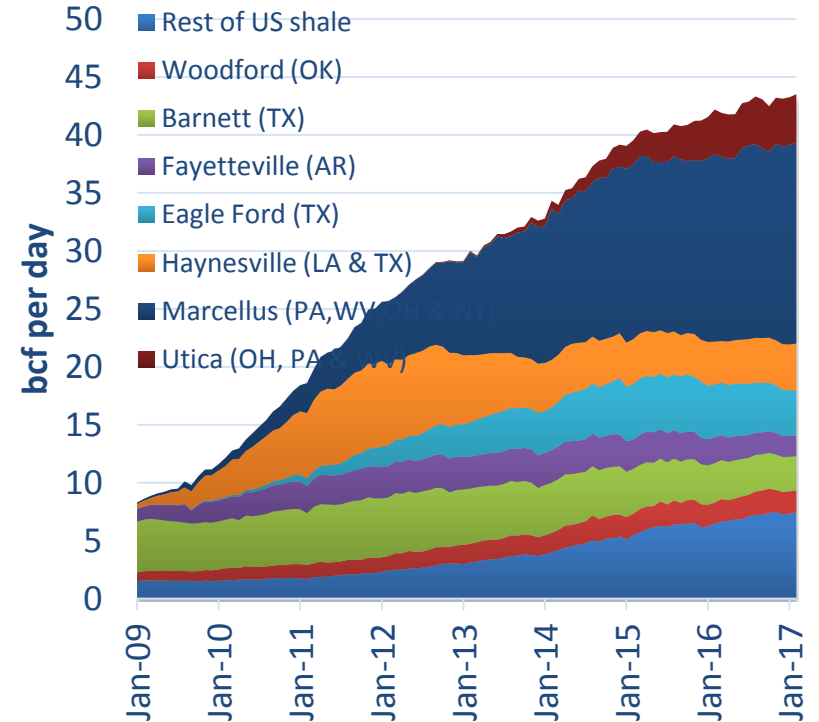


Despite low gas prices, shale gas production has continued to increase

Henry Hub Natural Gas Spot Price



Monthly dry shale gas production

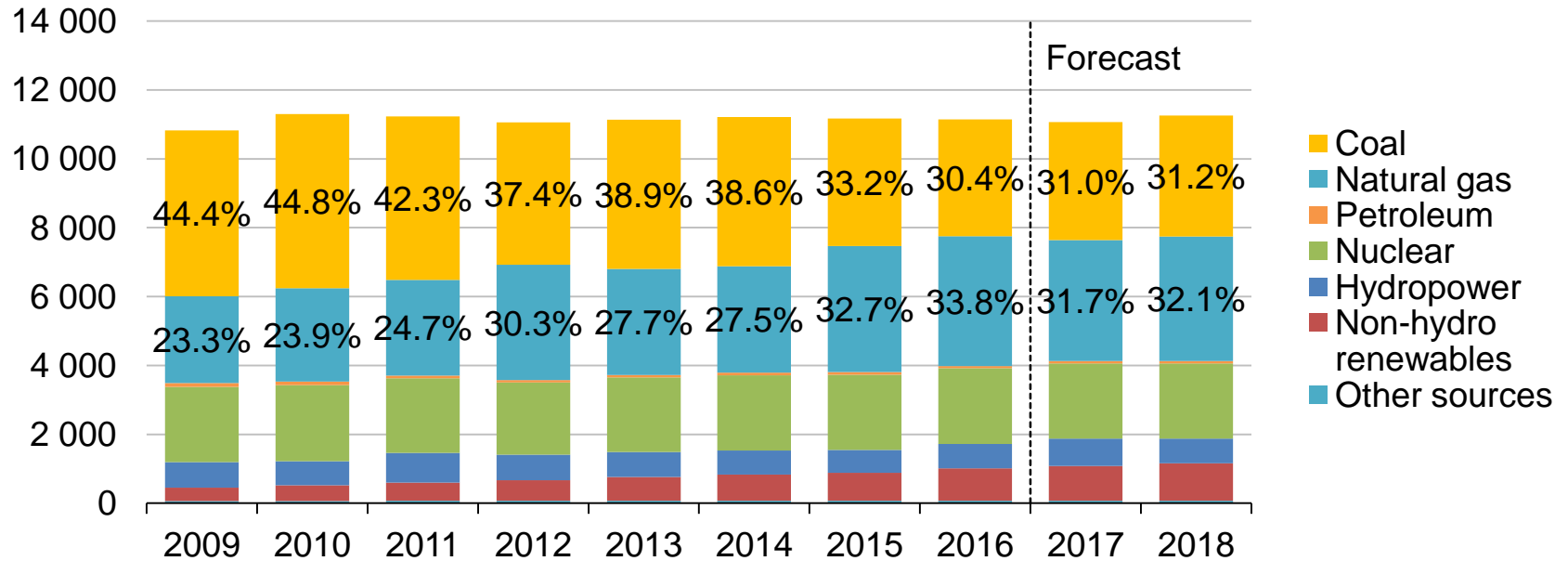


Dry shale gas production increased by 4.8% in 2016. Total US marketed production slightly decreased to 801 bcm in 2016 (1.6% lower than in 2015), its first annual decline since 2005. Production is expected to rise again in 2017.



US electricity generation by fuel

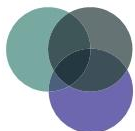
thousand megawatthours per day



Source: EIA, Short-Term Energy Outlook, April 2017

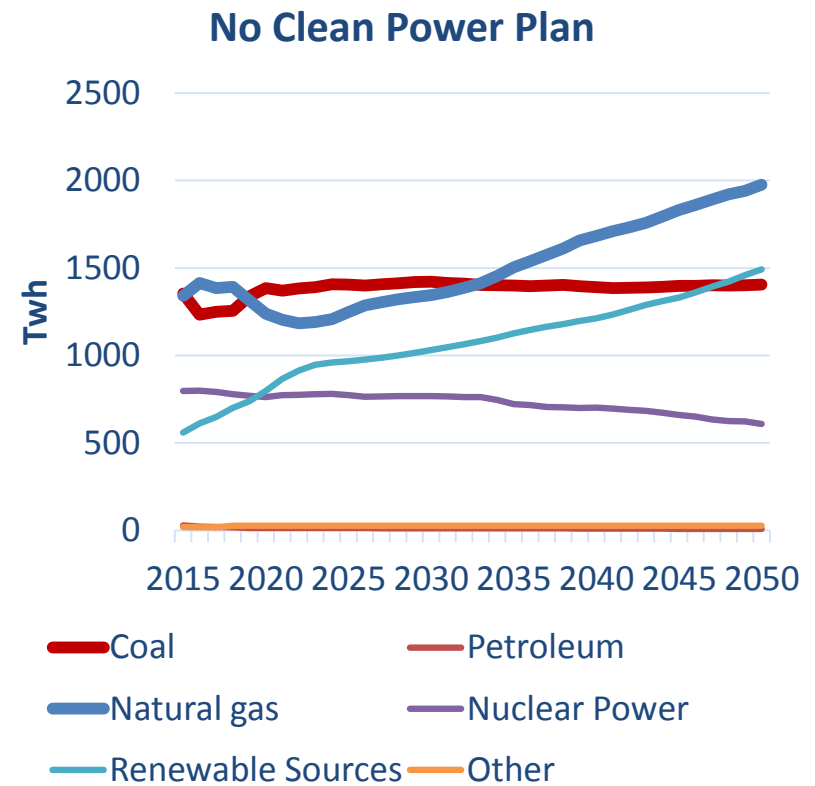
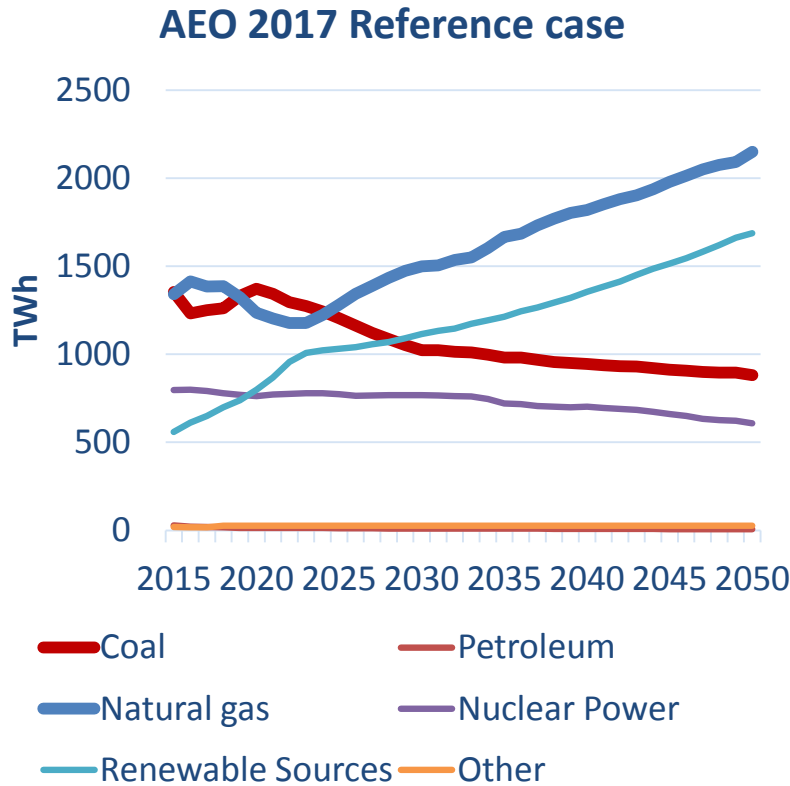
The share of gas reached 34% of electricity generation in 2016, outpacing coal (30%) for the first time ever.

Short-term competition is dictated by relative gas and coal prices

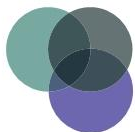


Status of the Clean Power Plan: a marginal impact on gas demand

Net electricity generation by source



With No Clean Power Plan, the growth in gas demand by the power sector is lower (1% over the projected period compared with 1.2% in the Ref case). Coal demand remains stable

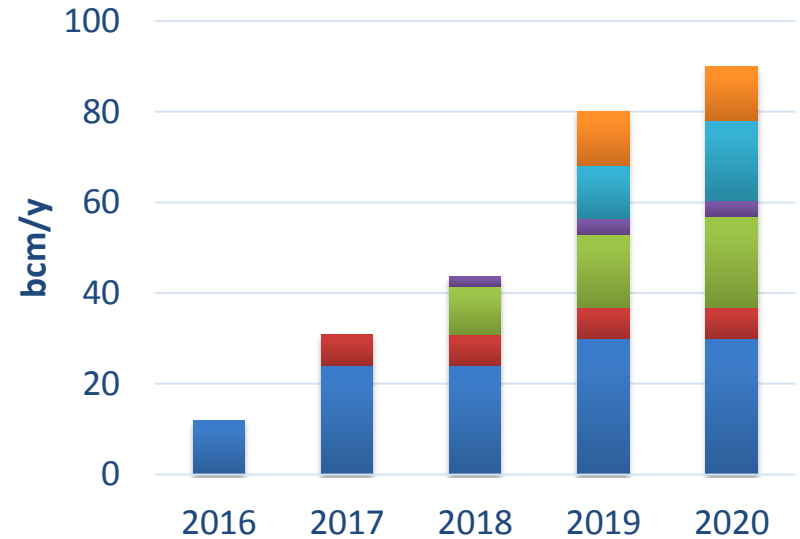


US LNG exports have started

Cheniere exported 56 cargoes in 2016, only 3 to Europe

LNG capacity (existing and under construction)

Exported 56 cargoes totaling ~200 Tbtu to 17 countries across the globe



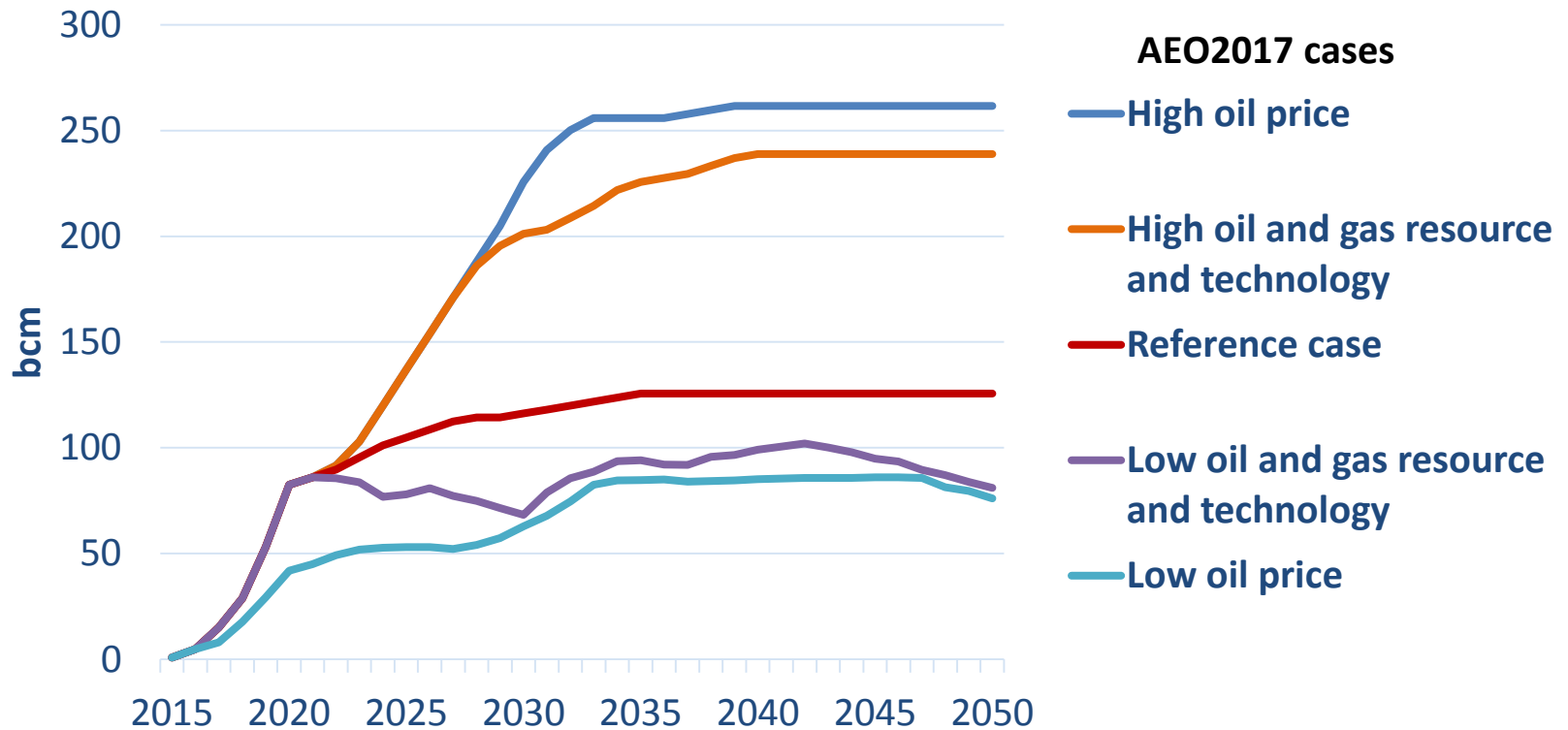
■ Sabine Pass ■ Cove Point ■ Cameron LNG
■ Elba Island ■ Freeport ■ Corpus Christi

US LNG exports totaled 3.8 bcm in 2016. They were sent to markets offering the highest netback (South America, Asia in winter time)

US LNG capacity to rise to 90 bcm/y by 2020, 14% of the global total



Outlook for US LNG exports



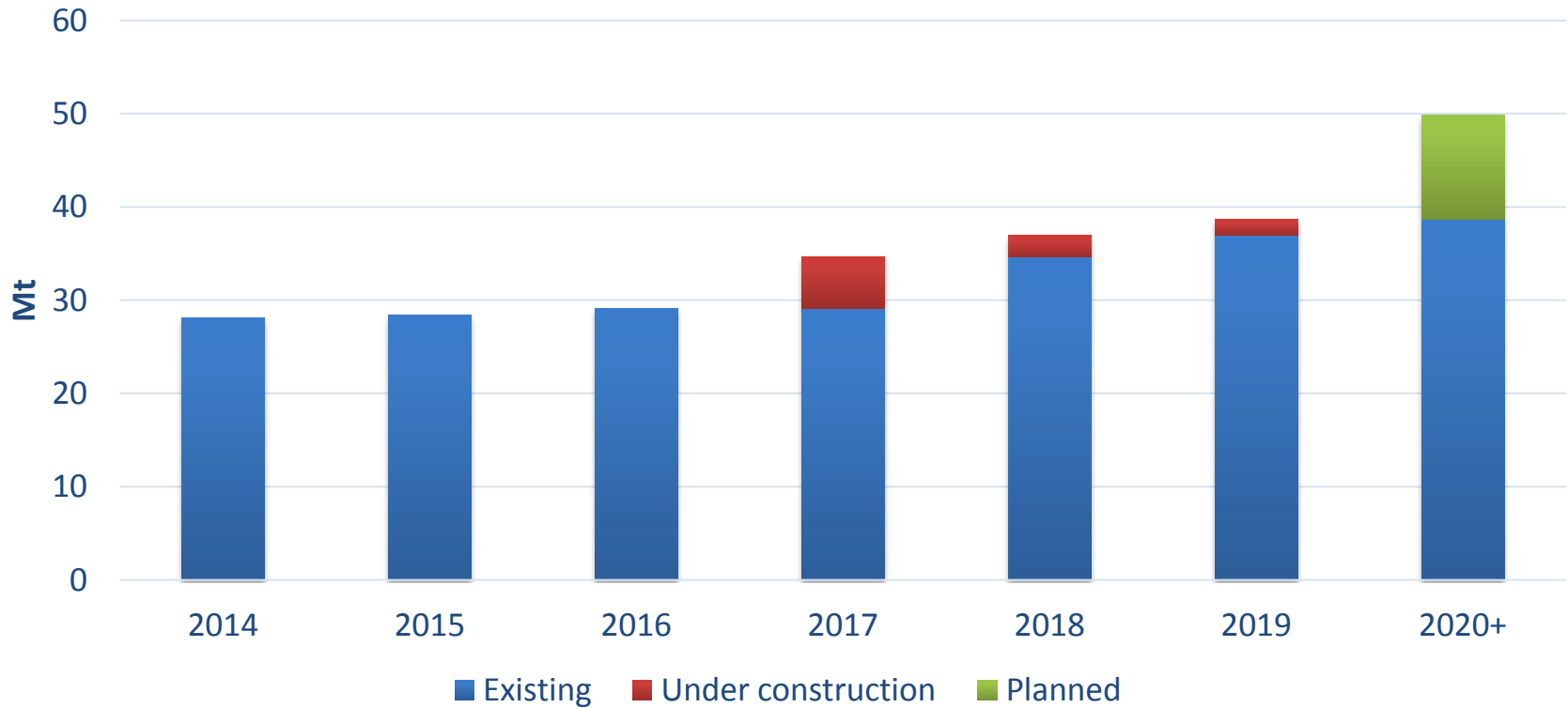
REF case: After 2021, projected U.S. exports of LNG grow at a more modest rate as US natural gas faces growing competition from other global LNG suppliers.

LNG exports could be much higher according to prices and technology: the US number 1 LNG exporter?

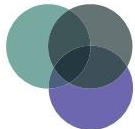


2017: The first new wave of ethylene crackers is coming on stream

US ethane cracking capacity



*And the second wave (post 2020) will even be bigger and export-oriented.
US ethylene capacity to rise by almost 80% to 50 Mt/y*



US Chemical Investment Linked to Shale Gas: \$179 Billion since 2010



Source: American Chemistry Council (ACC), March 2017

The chemical industry is leading expansion in US manufacturing

Conclusion

- ❑ US shale gas has been a game changer for US economy and trade and is now extending its effects to the global market
- ❑ **'America First' Energy plan**
- ❑ The priority of Trump and his administration -- to “unleash America’s \$50 trillion in untapped shale, oil, and natural gas reserves, plus hundreds of years in clean coal reserves” -- aims to **make the U.S. the global leader in fossil-fuel production.**
- ❑ Less regulation will increase shale gas production, lower US gas prices
- ❑ Market forces will remain the main determinant

