



Natural Gas Developments and Prospects

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- Share of natural gas in energy mix
- Natural gas demand outlook
- Natural gas supply
- Unconventional gas
- LNG prospects
- Comparison of natural gas prices

World primary energy demand



	Levels <i>mboe/d</i>				Growth <i>% p.a.</i>	Fuel shares <i>%</i>			
	2014	2020	2030	2040	2014–40	2014	2020	2030	2040
Oil	85.1	90.7	96.7	99.8	0.6	31.1	30.3	28.2	26.1
Coal	77.7	82.7	88.9	91.5	0.6	28.4	27.6	25.9	23.9
Gas	59.6	66.9	84.0	101.7	2.1	21.8	22.3	24.4	26.6
Nuclear	13.2	15.5	19.5	23.4	2.2	4.8	5.2	5.7	6.1
Hydro	6.6	7.6	8.9	9.9	1.5	2.4	2.5	2.6	2.6
Biomass	28.2	30.7	34.6	38.1	1.2	10.3	10.2	10.1	10.0
Other renewables	3.4	5.7	11.0	17.9	6.6	1.3	1.9	3.2	4.7
Total	273.9	299.9	343.6	382.1	1.3	100.0	100.0	100.0	100.0

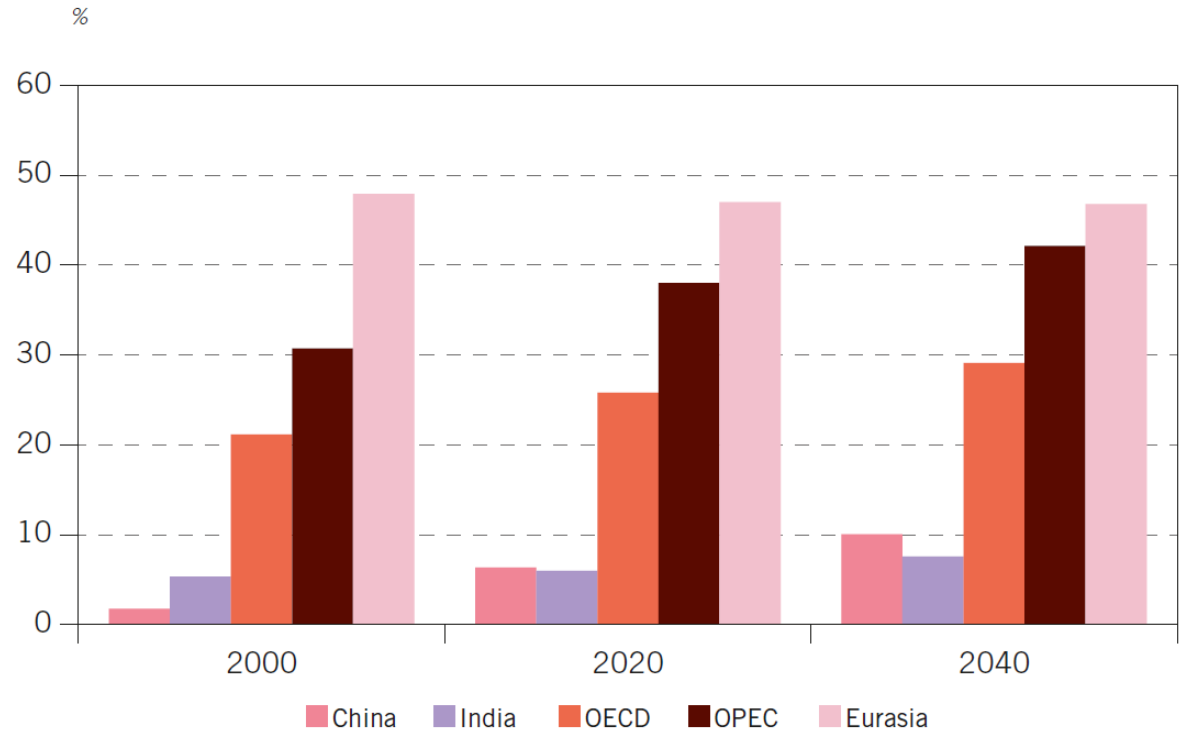
Source: OPEC World Oil Outlook 2016

- Fossil fuel shares converge; gas takes over in 2040

Share of natural gas in energy mix



- Natural gas increasingly important source of energy
- But prominent consumers have small gas shares in energy mix

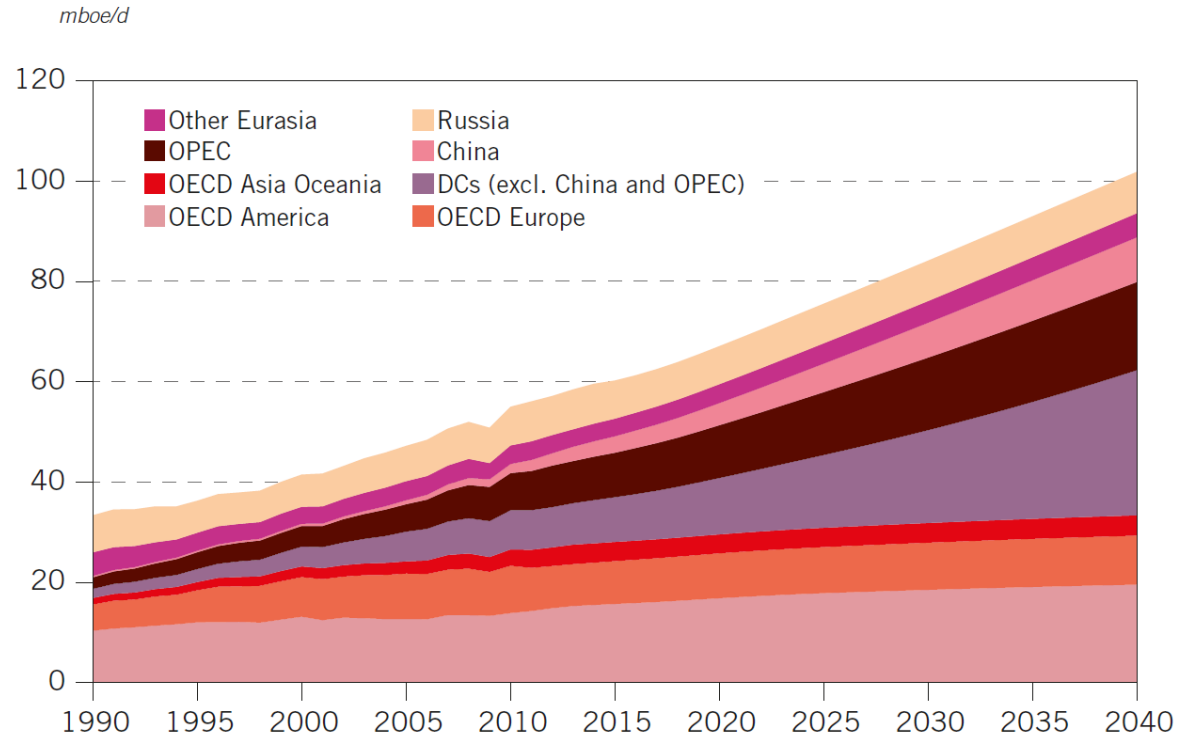


Source: OPEC World Oil Outlook 2016

Natural gas demand outlook



- Gas demand dominated by OECD; developing countries take lead after 2020

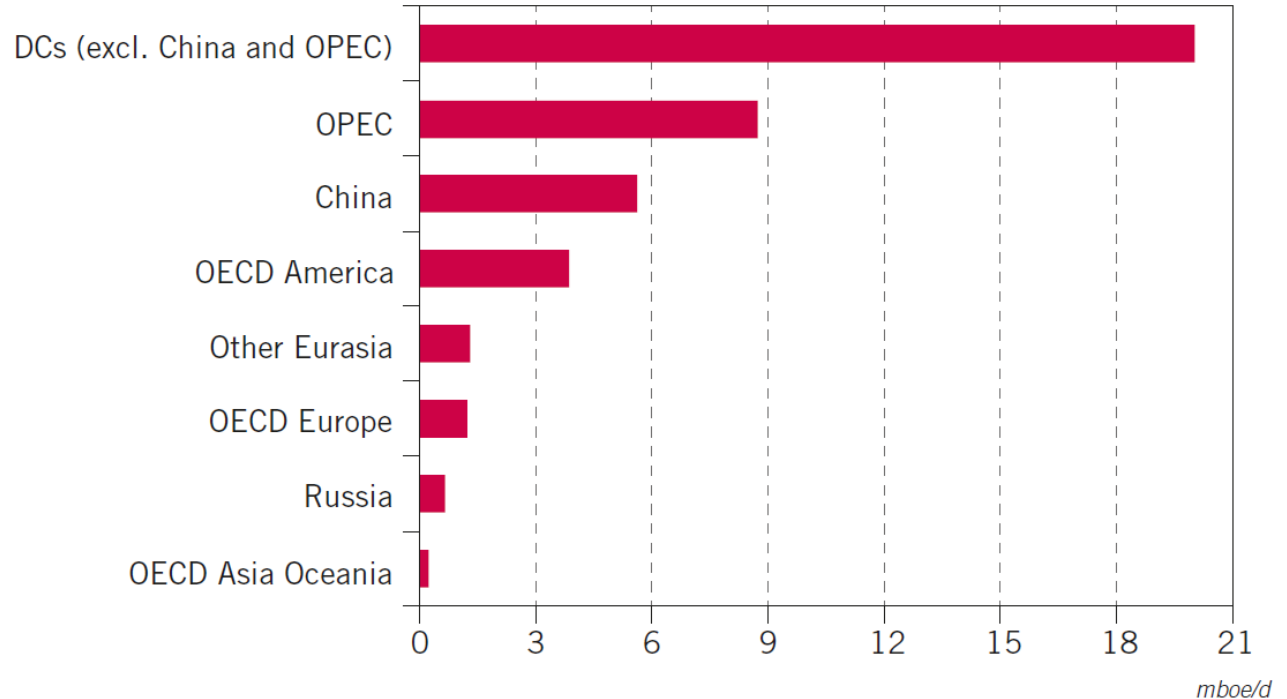


Source: OPEC World Oil Outlook 2016

Natural gas demand growth, 2015-2040



- Large difference between gas demand growth in DCs and others

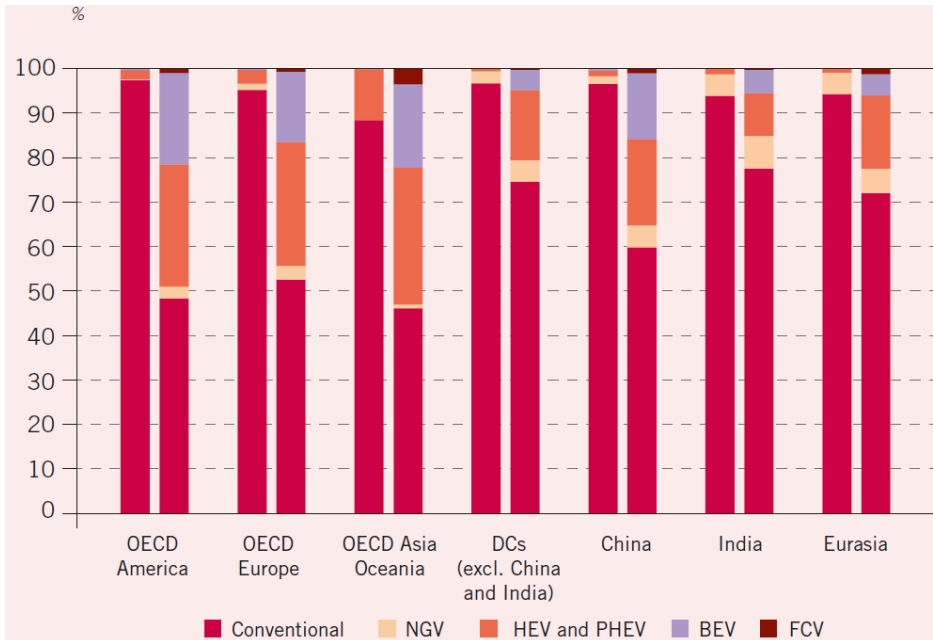


Source: OPEC World Oil Outlook 2016

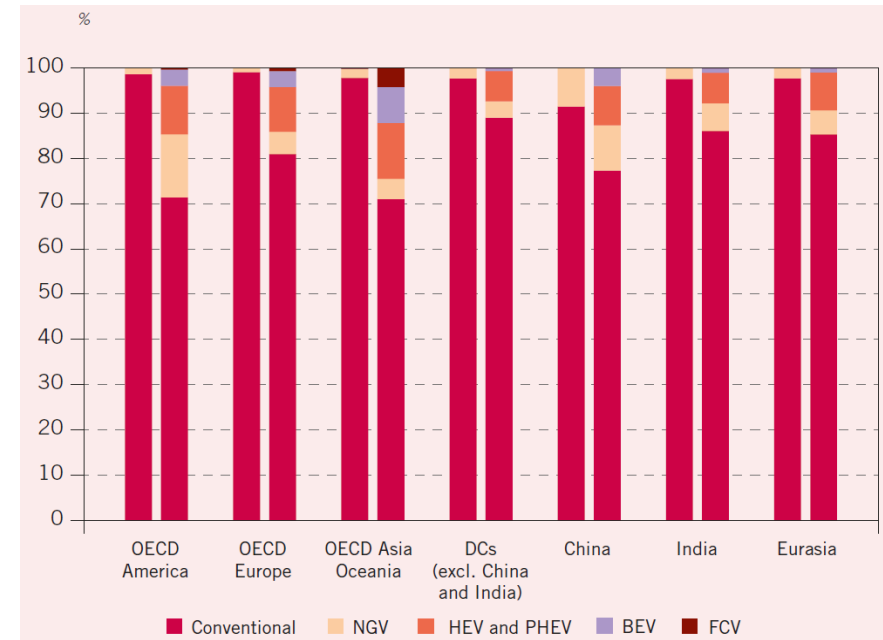
Natural gas in transportation



Composition of new sales of passenger cars, 2014 and 2040



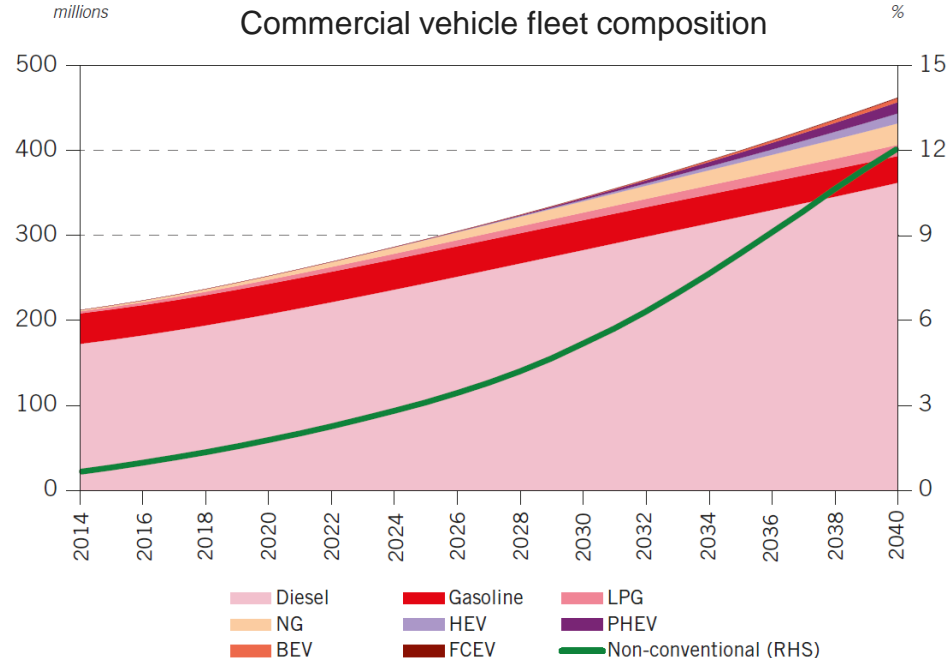
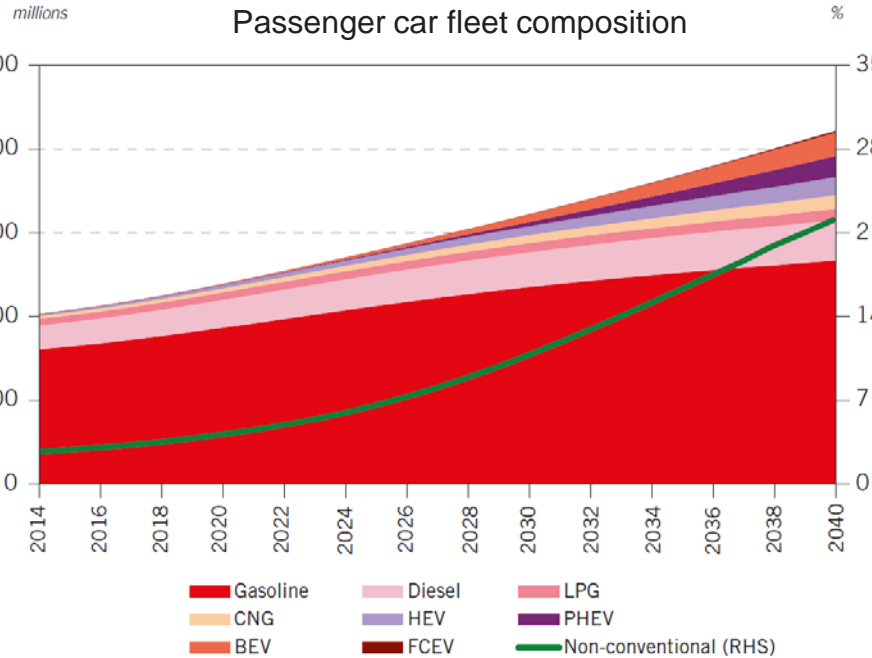
Composition of new sales of commercial vehicles, 2014 and 2040



- NGV sales gaining share at moderate rates

Source: OPEC World Oil Outlook 2016

Natural gas in transportation



● CNG accounts for 4% in 2040

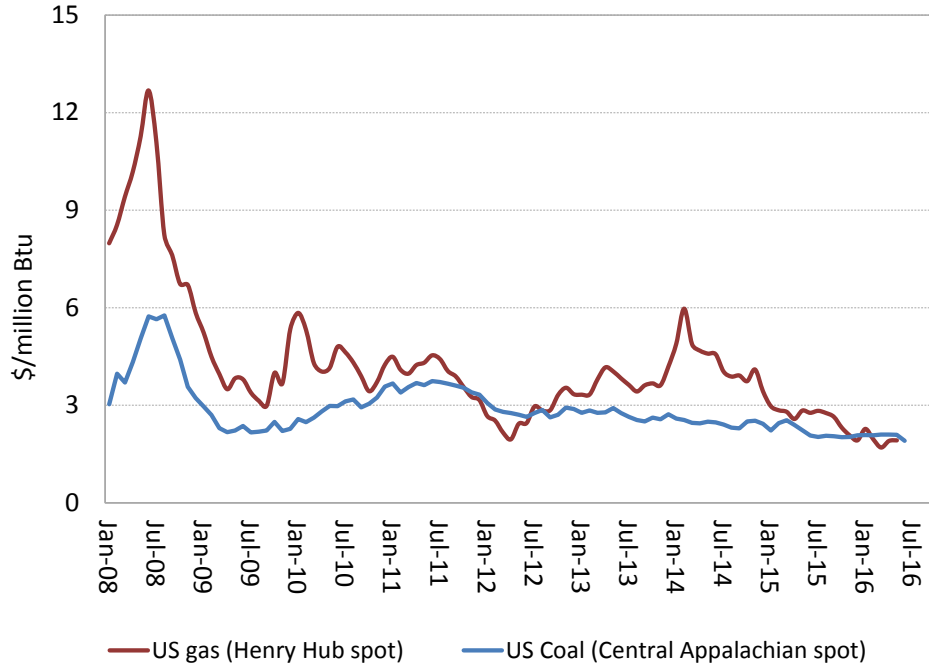
● NG accounts for 5% in 2040

Source: OPEC World Oil Outlook 2016

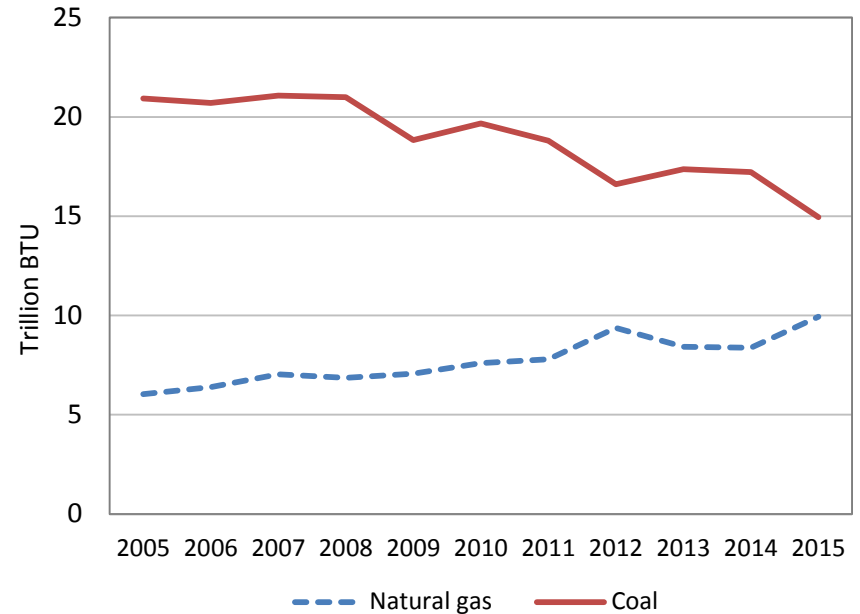
Natural gas in power generation



Comparison of gas and coal prices



Gas and coal in electricity sector



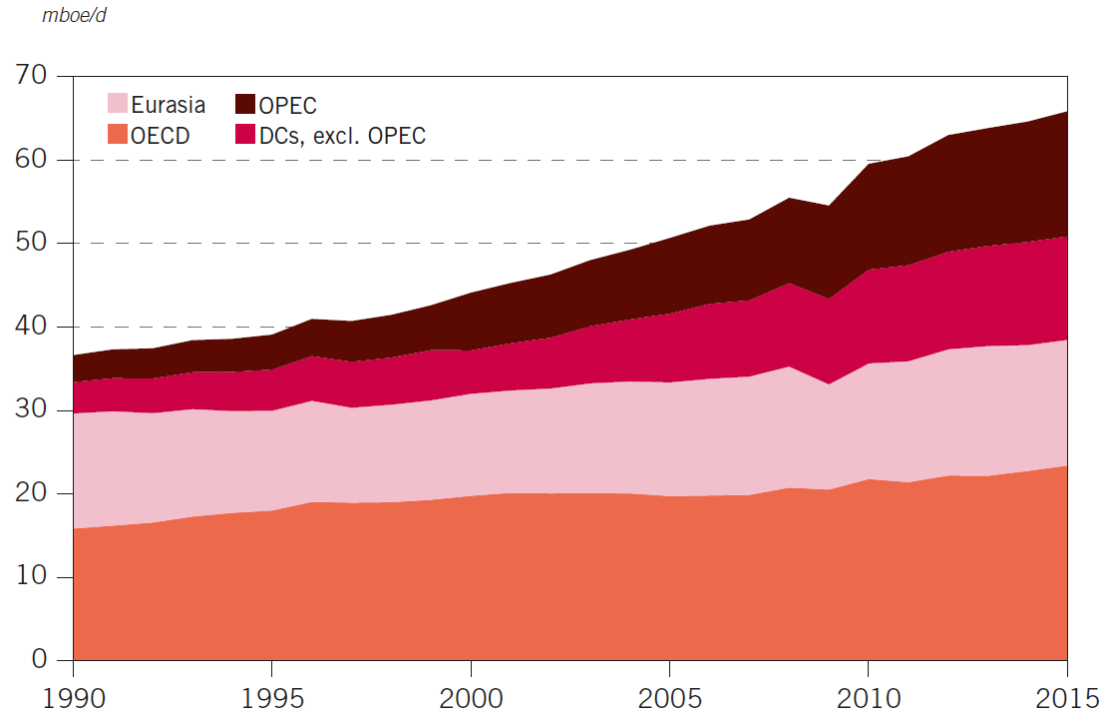
- Electric power sector taking advantage of low gas prices

Sources: IMF, NYMEX, EIA

Natural gas supply



- Past supply dominated by OECD, but OPEC and developing countries have seen a rapid rise

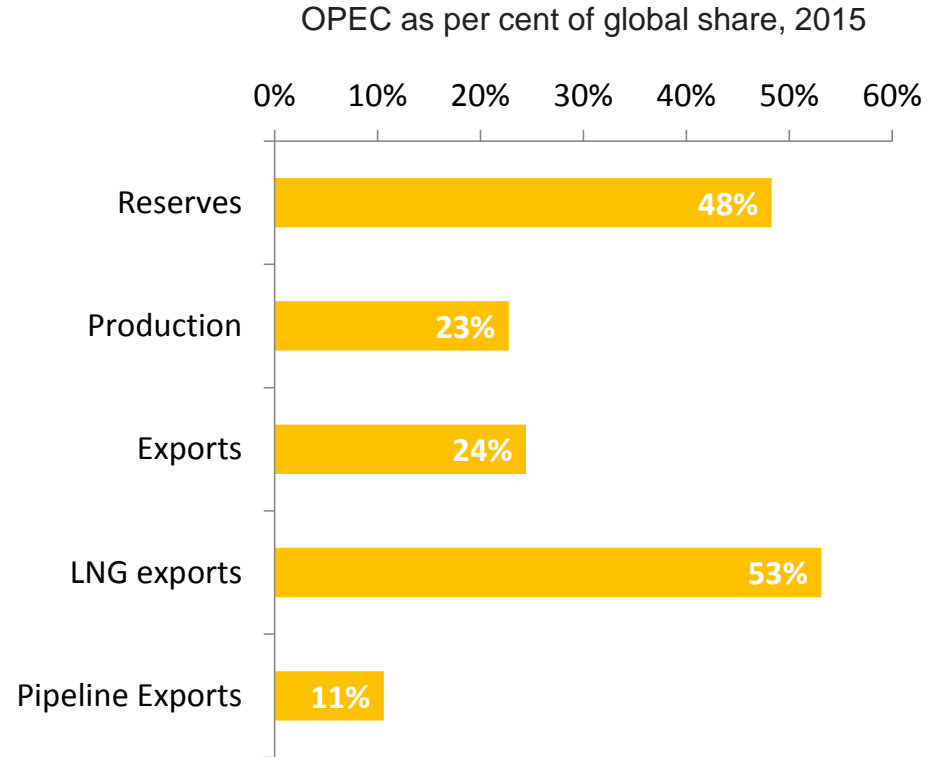


Source: OPEC Annual Statistical Bulletin

OPEC natural gas profile



- OPEC Member Countries, with large reserves, possess significant potential for production and exports

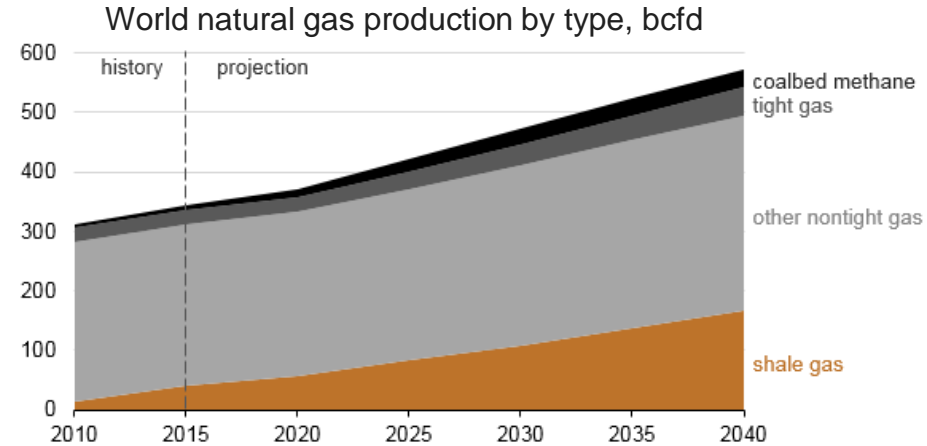
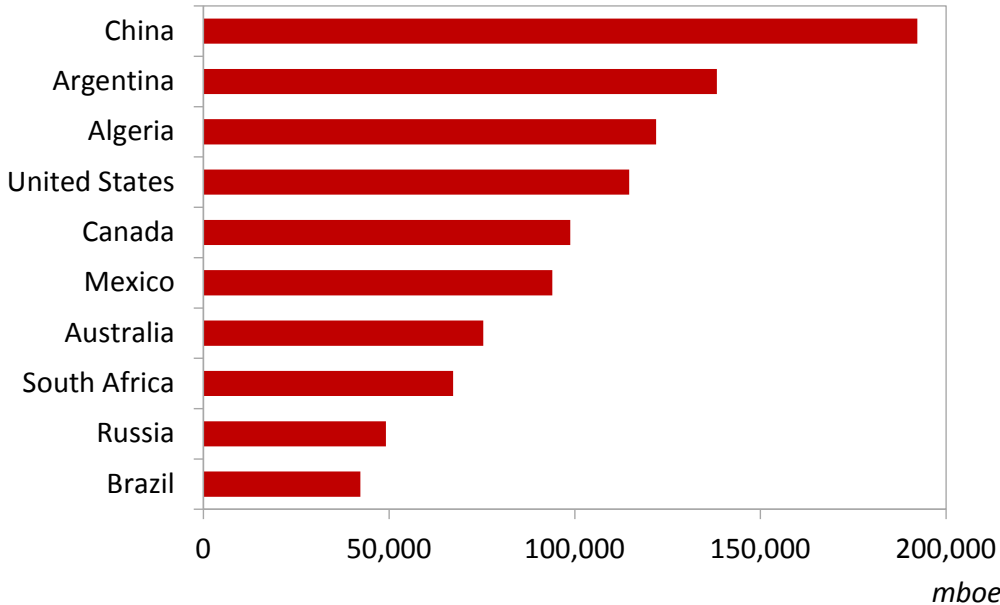


Source: OPEC Annual Statistical Bulletin, BP

Unconventional gas



Shale gas resources (Top 10 countries)



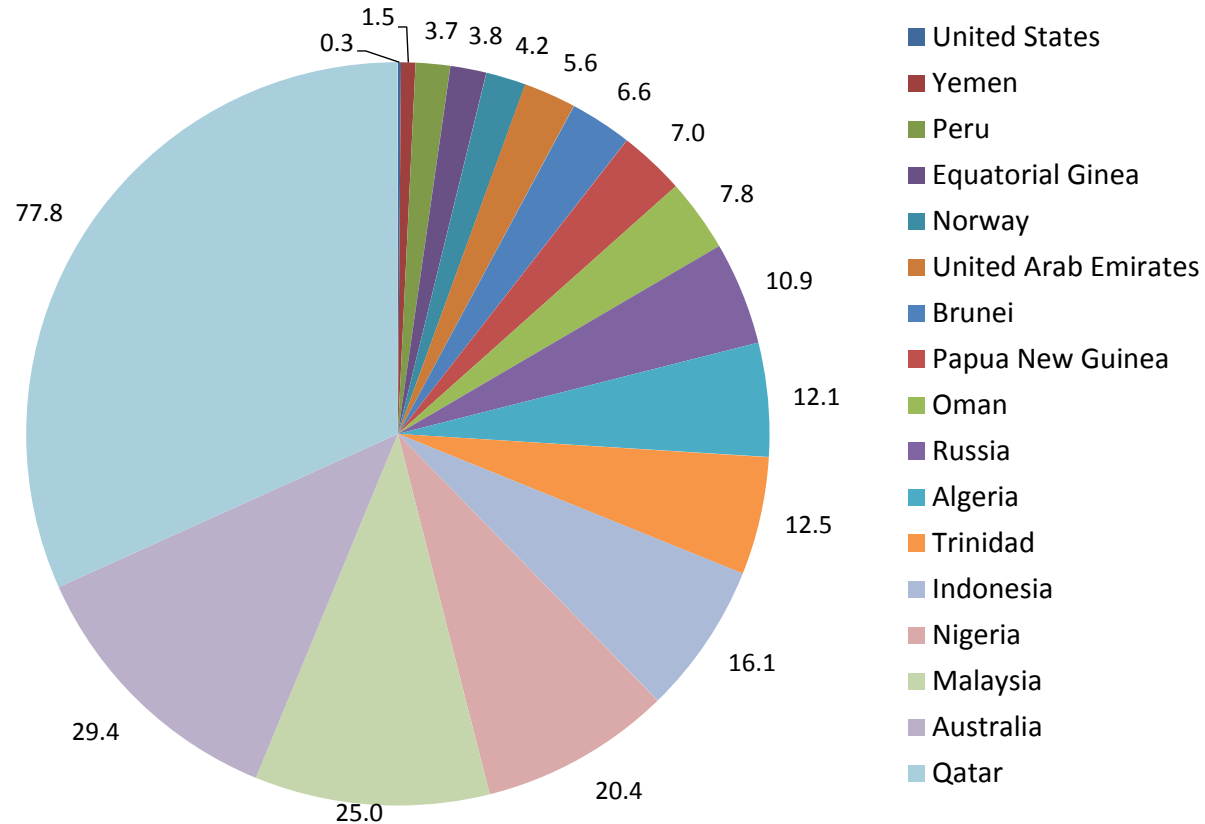
Sources: ARI, EIA

- Unconventional gas production on the rise, but challenges remain

LNG Exports in 2015, mtpa



- Rising gas use is partially explained by significant number of new LNG projects on the way

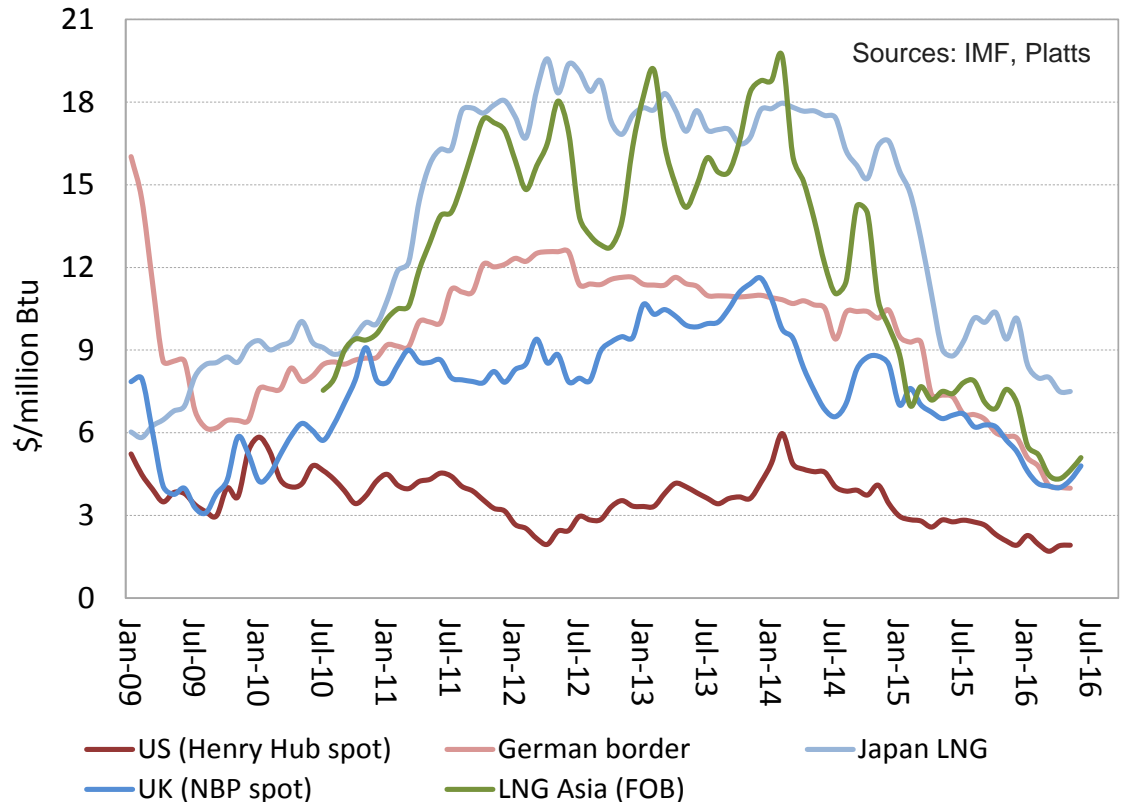


Source: International Gas Union

Comparison of natural gas prices



- Natural gas prices diverged with unconventional gas boom
- Converging again following supply overhang and oil price fall





- A relatively optimistic view of gas consumption is projected over long-term
 - Vast recoverable resources and rapidly expanding gas trade support this view
- Given current market circumstances, there is uncertainty for LNG prospects
- Climate policies also play an important role

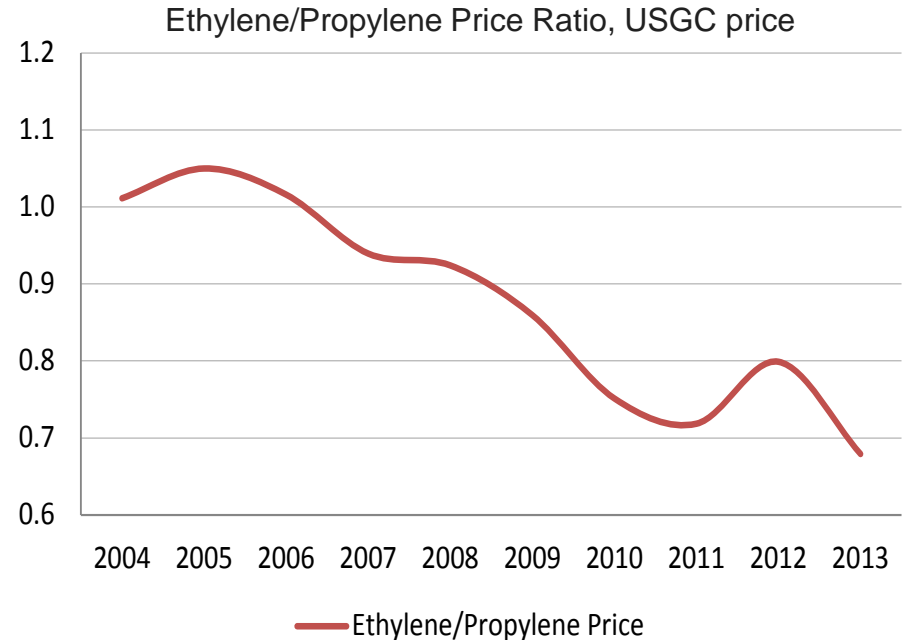


Thank you



The petrochemical industry

- The US shale gas revolution is having important consequences for its petrochemical industry
- The availability of relatively cheap natural gas has provided the country with ethane at relatively low prices
- Ethane is forecast to displace further volumes of naphtha as a cracker feedstock
- However, the shift to lighter steam cracking feedstocks reduced the availability of co-product
- In 2012, co-product propylene production from steam cracking was 2 million tonnes lower than the level of production in 2006



Source: Nexant