



Asian Oil and Gas Industry in a Global Context: Emerging Issues and How to Tackle Them

Presented by:

Dr. Fereidun Fesharaki, Chairman

38th JCCP International Symposium

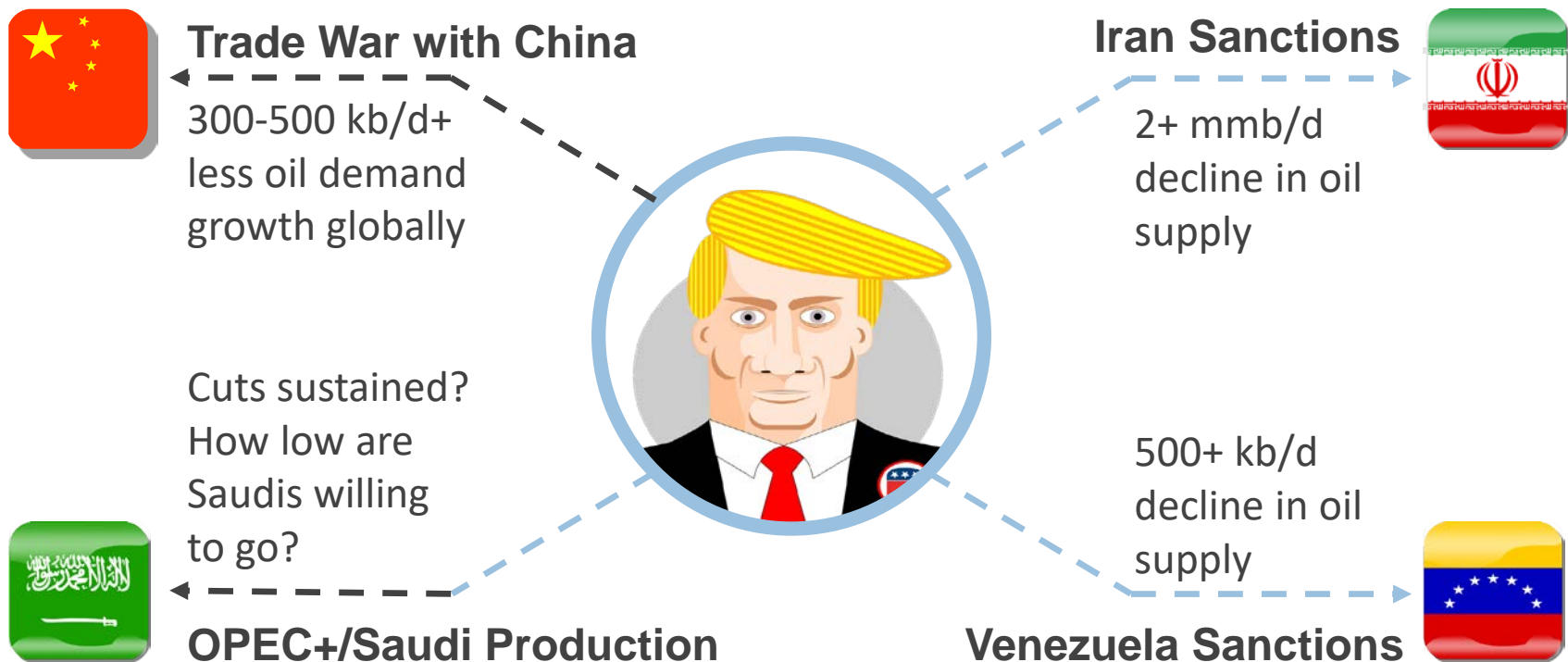
January 30, 2020

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Summary: Dramatic Changes in Oil Market Structure

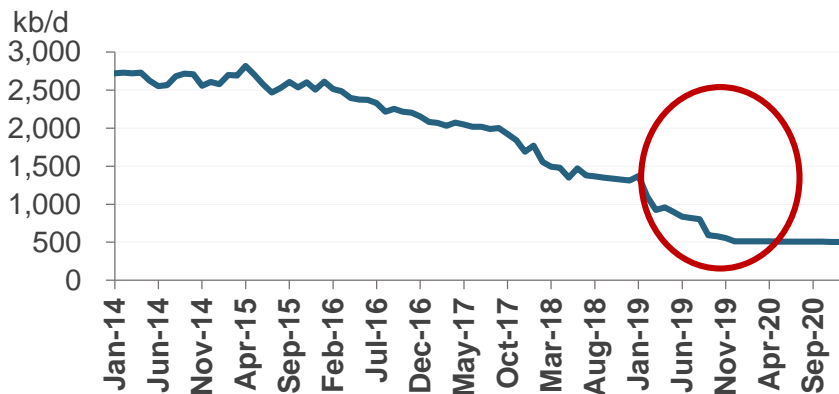
- Oil demand growth has dropped to only about 650 kb/d in 2019.
- Oil supply growth continues unabated, led by the US, but also everywhere else.
- IMO may shift prices higher in 2020.
- We see prices in the US\$55-US\$65/bbl range for the next few years. In 2020 prices can reach US\$70/bbl.
- Prices can probably be managed in the upper and lower range—but OPEC+ needs to retain cuts and Saudis will need to drop a bit further. We think they are ready to defend prices at US\$55/bbl. Saudi Aramco's IPO seems to be based on US\$60/bbl price.
- Of course, any geopolitical issues in the Gulf could quickly shift the equation!

Wild Card—Trump's Political Impact on Global Oil Market

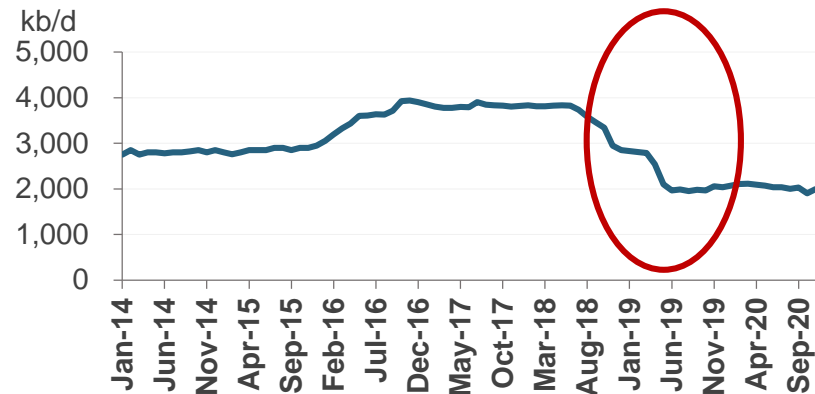


OPEC Wild Cards: Venezuela Collapsing, Iran Squeezed, Libya & Nigeria Unstable

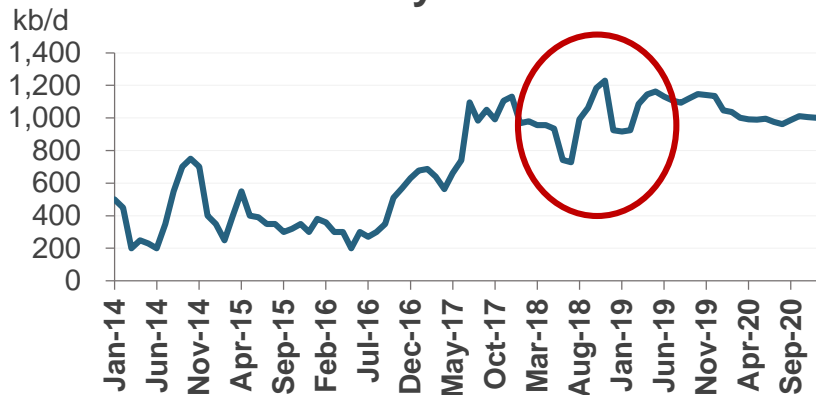
Venezuela



Iran



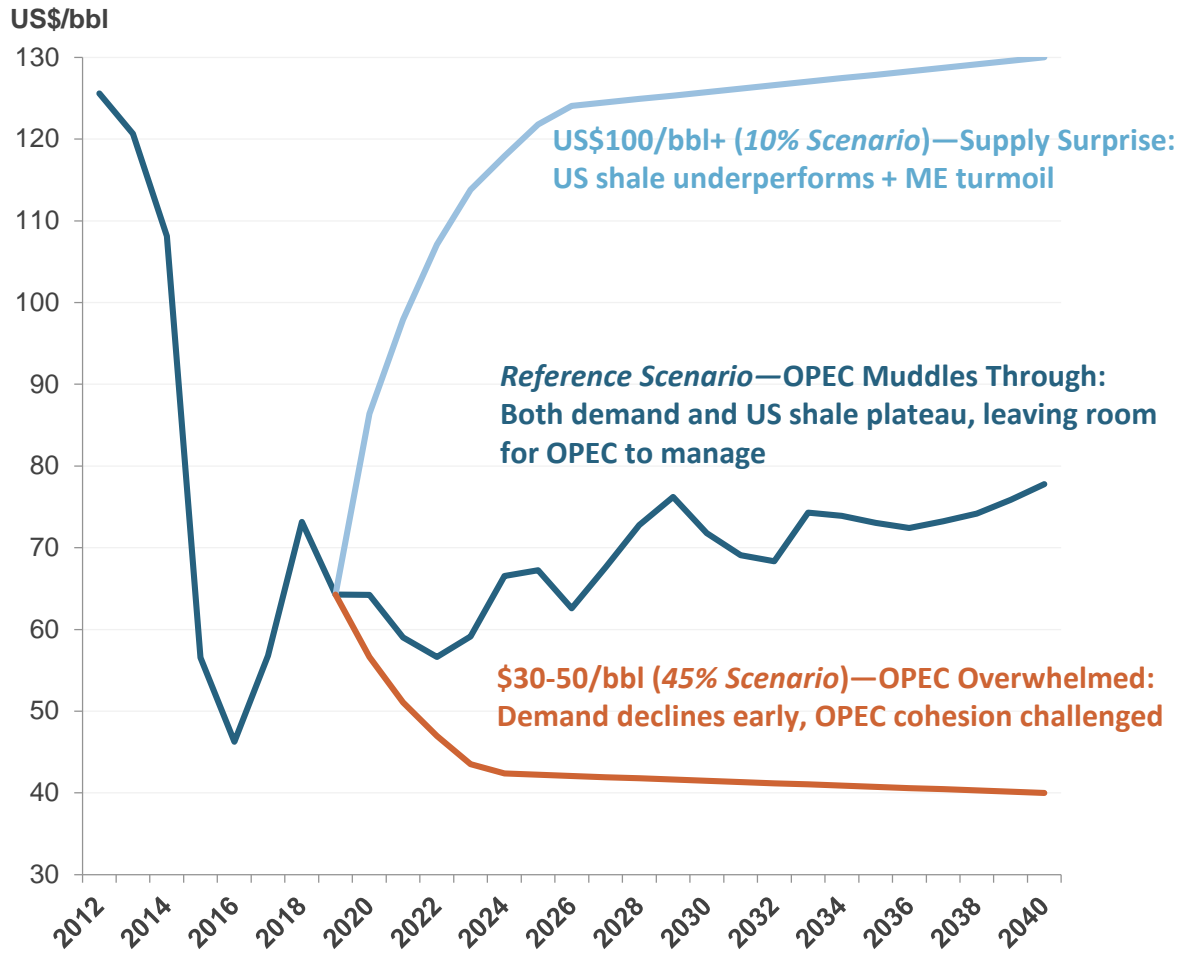
Libya



Nigeria

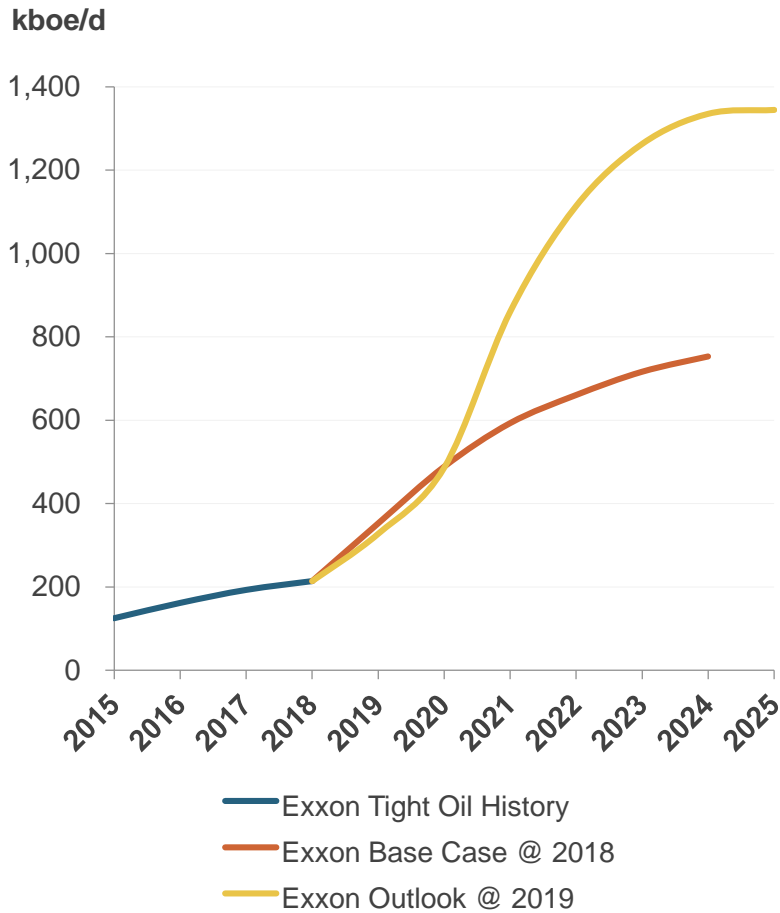


Brent Crude Price: Three Paths to the Future (Real 2020\$)

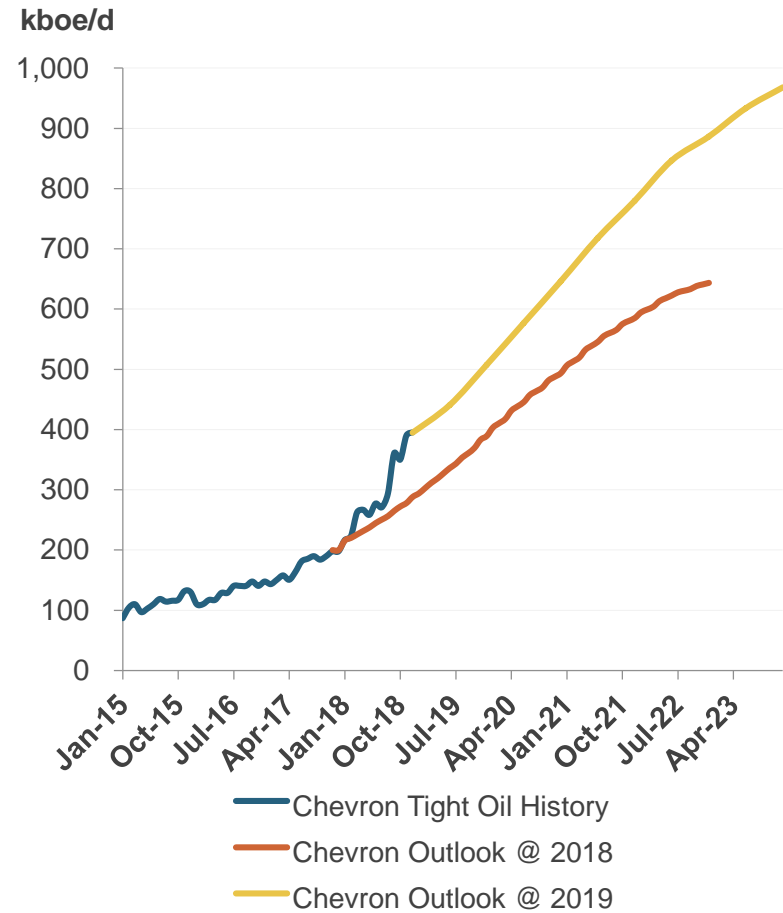


US Oil Supply: A Tale of Two Majors—Transforming US Shale

Exxon 2019 US Tight Oil Outlook

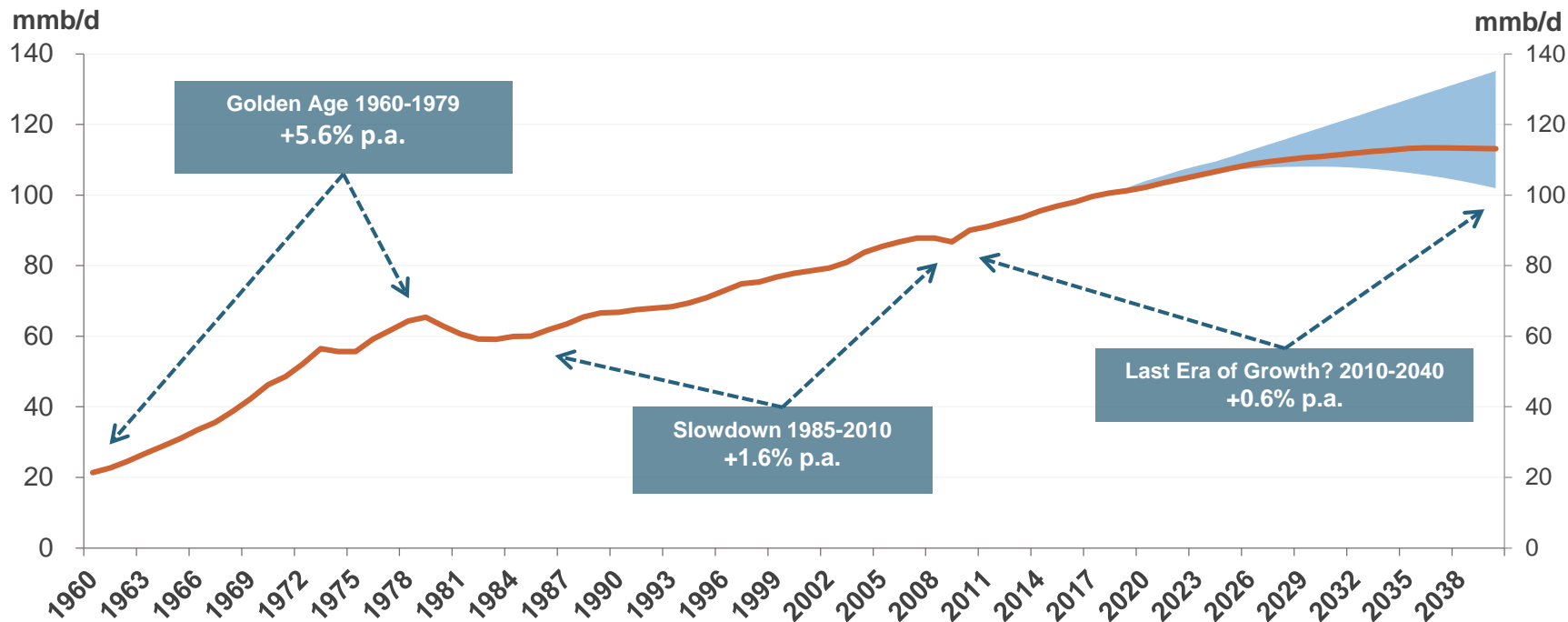


Chevron 2019 Tight Oil Outlook



World Long Term Oil Demand Outlook

World Demand Outlook

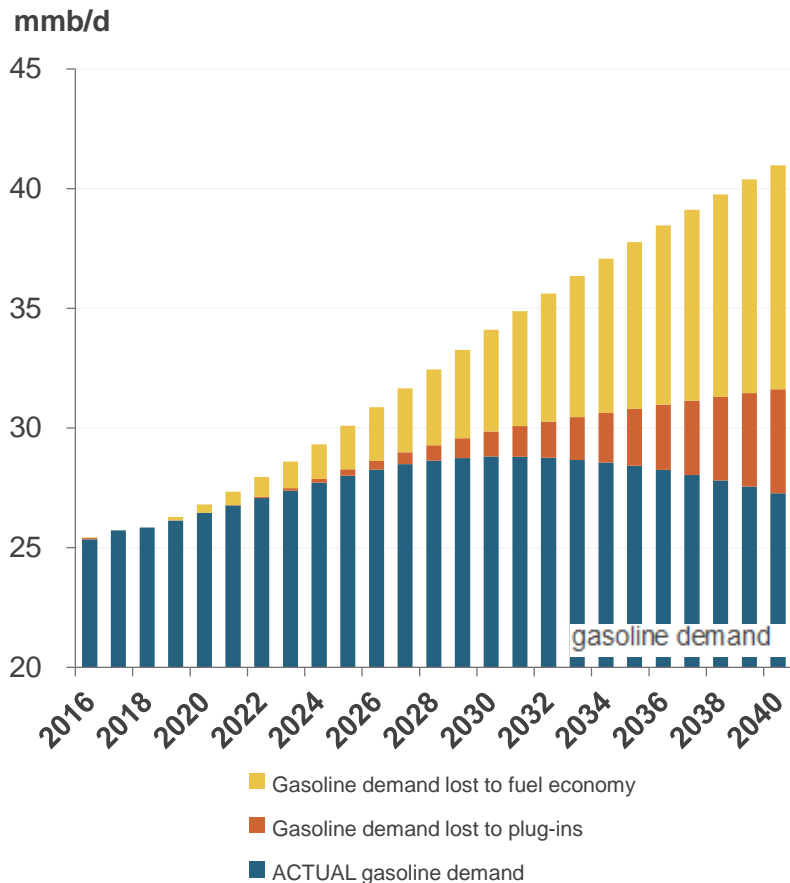


- Base case: 115 mmb/d by 2040, compared with 98 mmb/d in 2016.
- High case: 131 mmb/d by 2040, supported by low oil prices and strong consumer demand.
- Low case: peak at 108 mmb/d around 2030, strict implementation of environmental policies and strong efficiency gains.

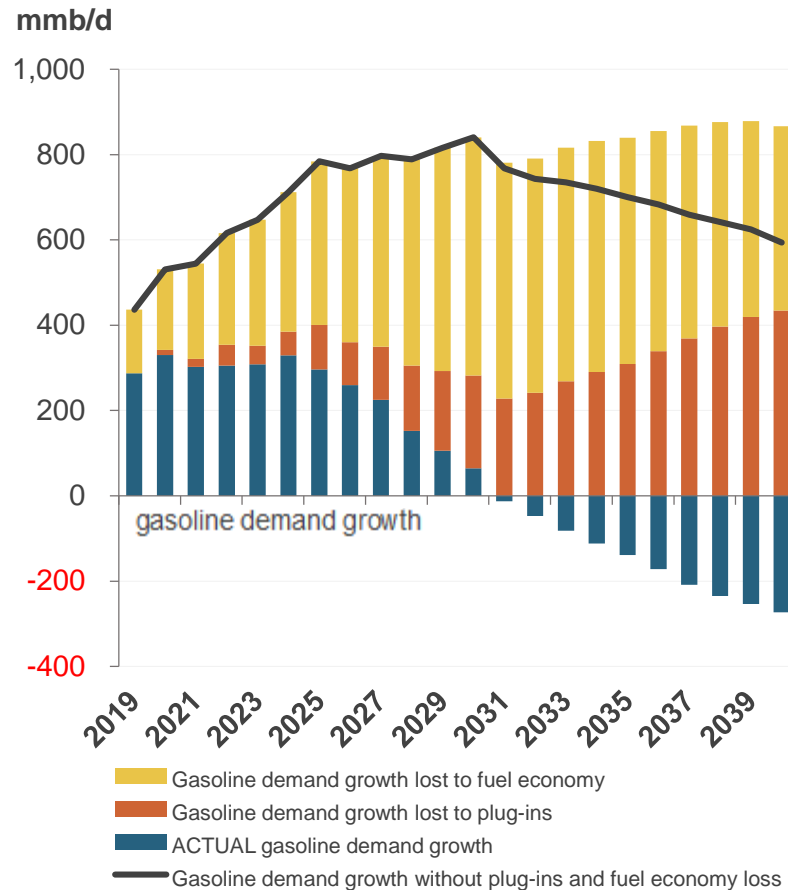
Gasoline Not Going Away, But EVs Hit Growth by Late 2020s

Source: [FGE Long-Term Global Oil Market Outlook to 2040/Road Transport and Electric Vehicle Section](#)

Global Gasoline Demand Lost to Electrification and Fuel Economy

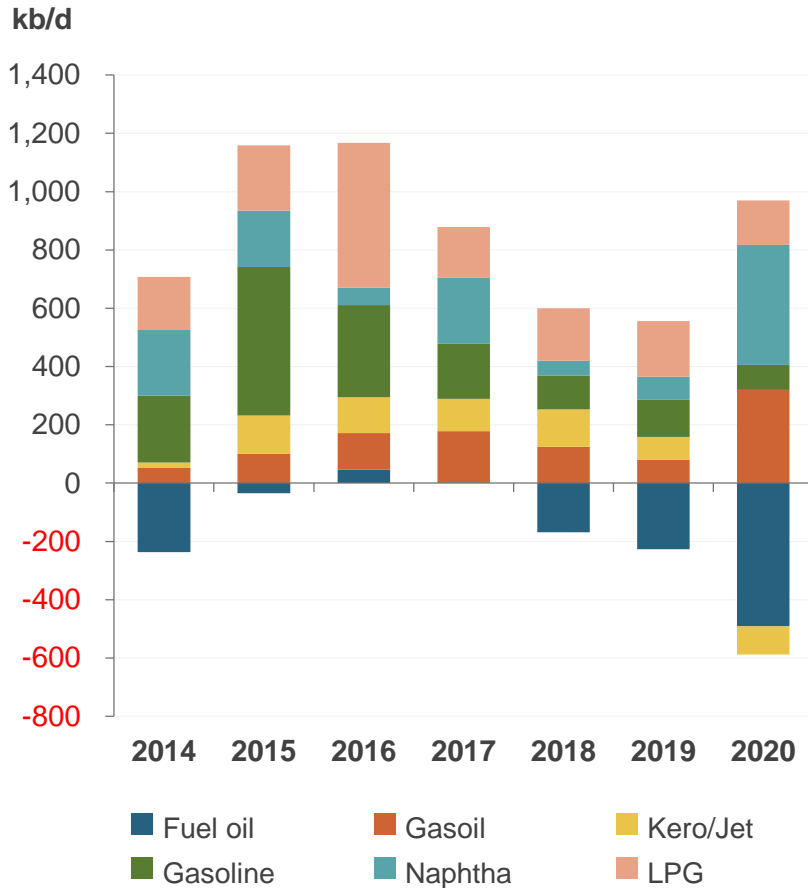


Fuel Economy vs. Electrification Effect on Global Gasoline Demand Growth



Asian Demand: Shifting Patterns of Growth

Asia Pacific Main Product Demand Growth

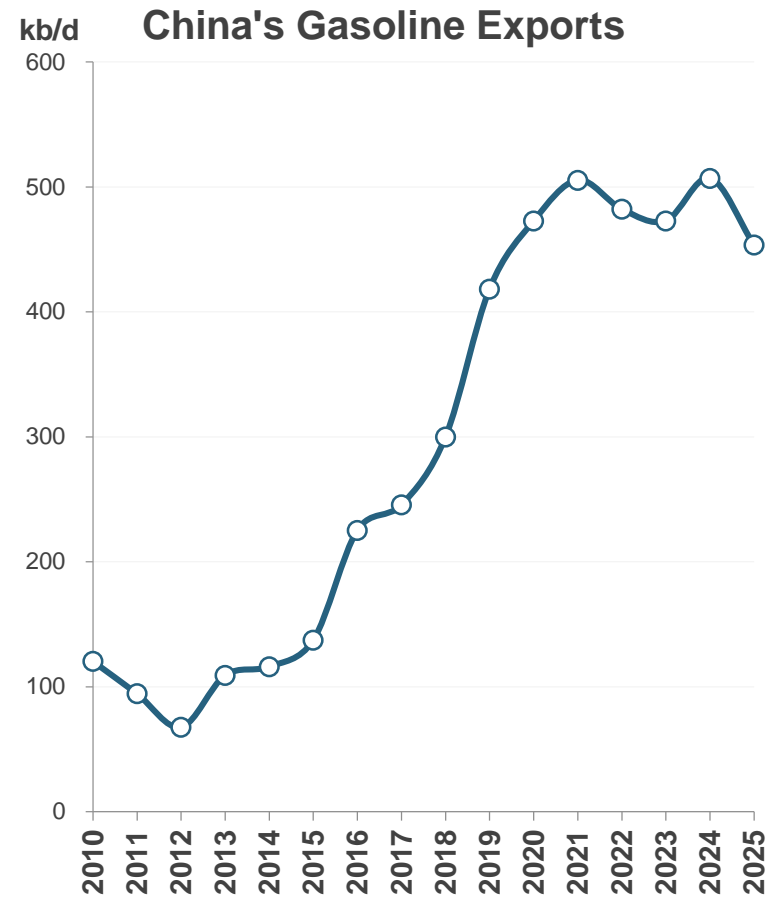
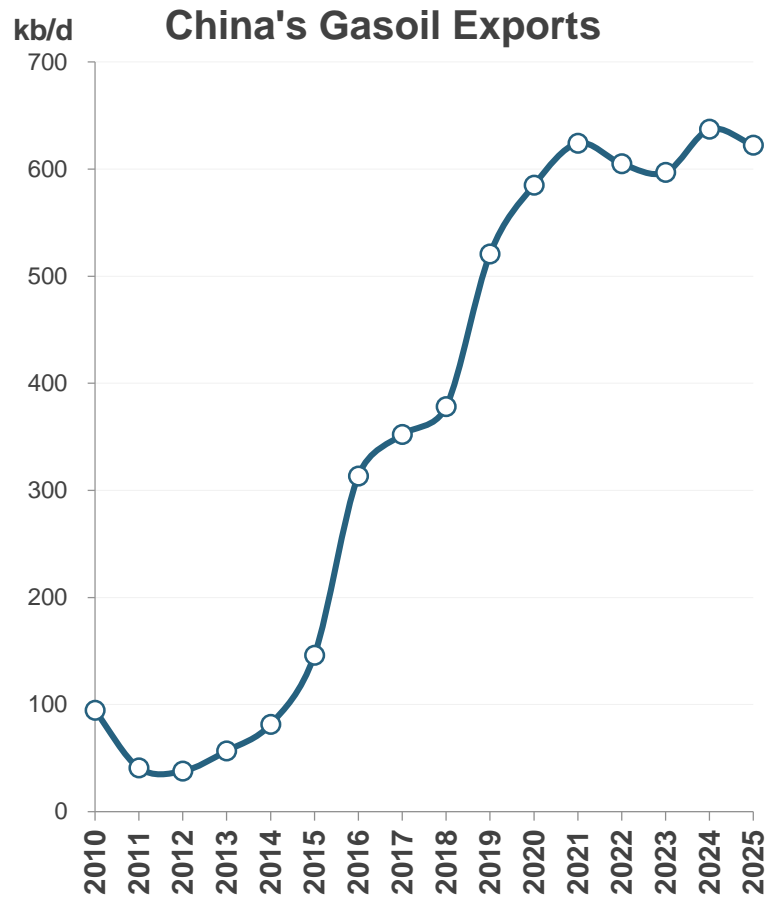


Total Oil Demand Growth,* kb/d

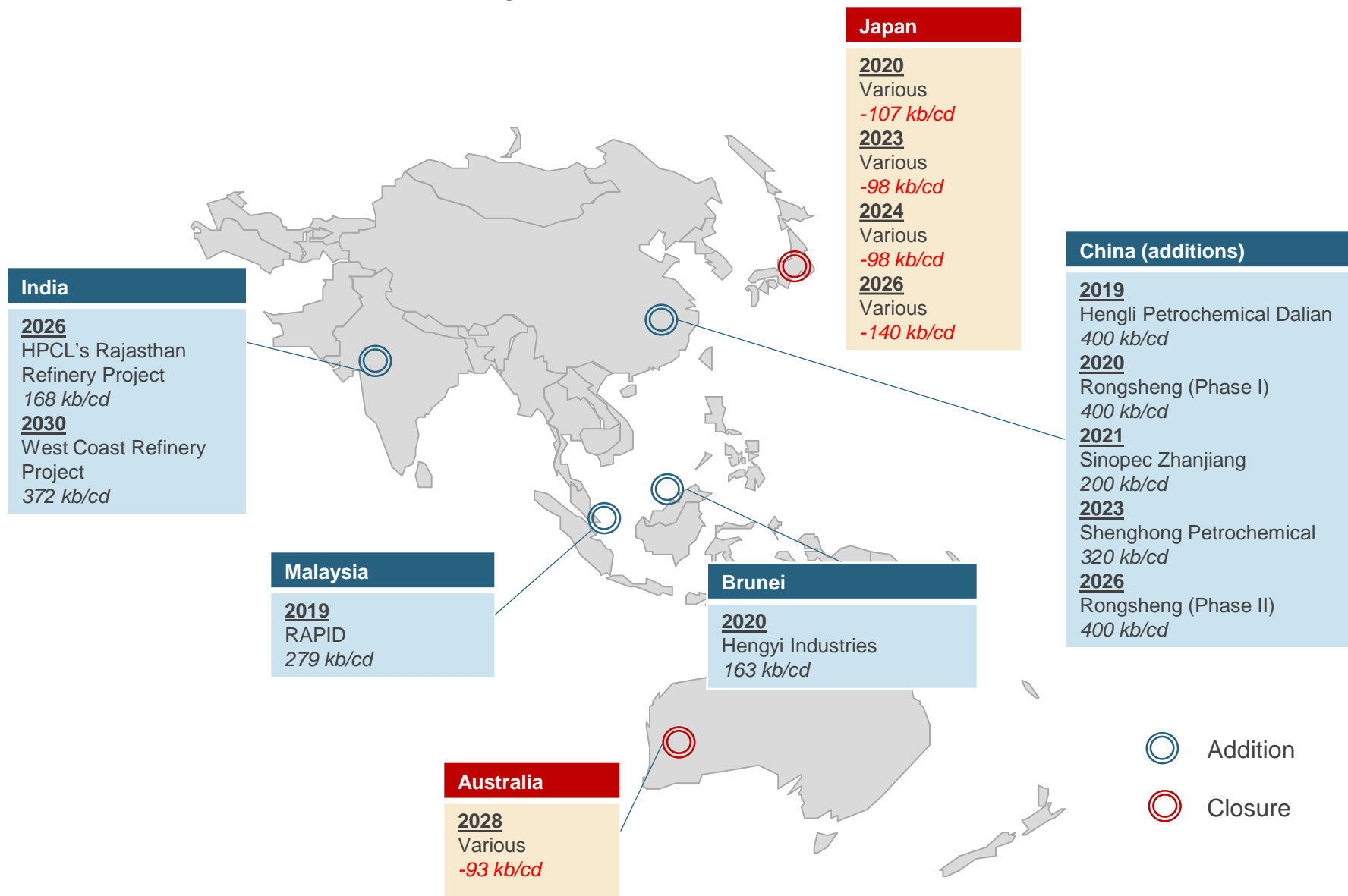
	2015	2016	2017	2018	2019	2020
China	495	359	515	415	297	337
India	356	265	144	213	98	171
Japan	-128	-157	-134	-151	-128	-46
South Korea	181	191	39	-20	-38	-46
Rest of Asia	149	223	412	86	69	111
Total	1,053	882	975	540	298	461

*Includes other products and direct crude burn for Japan

China's Gasoil and Gasoline Exports Weigh on Market

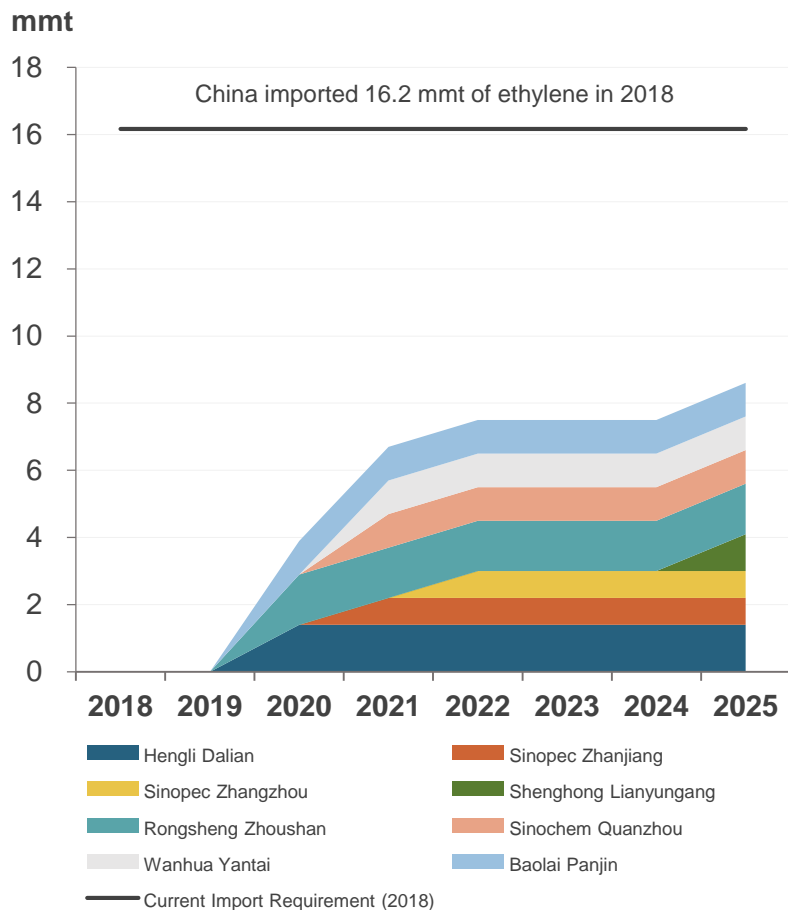


Asia Grassroots Refinery Additions and Closures, 2019-2030

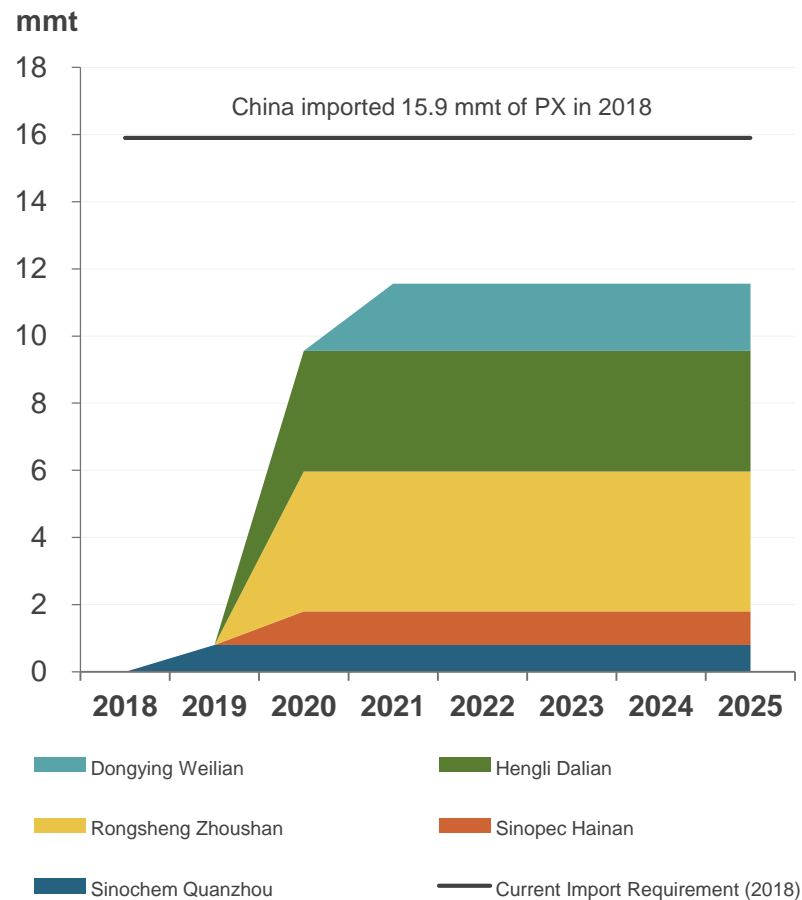


China's Quest for Petrochemical Self-Sufficiency Leads Naphtha-Focused Expansion

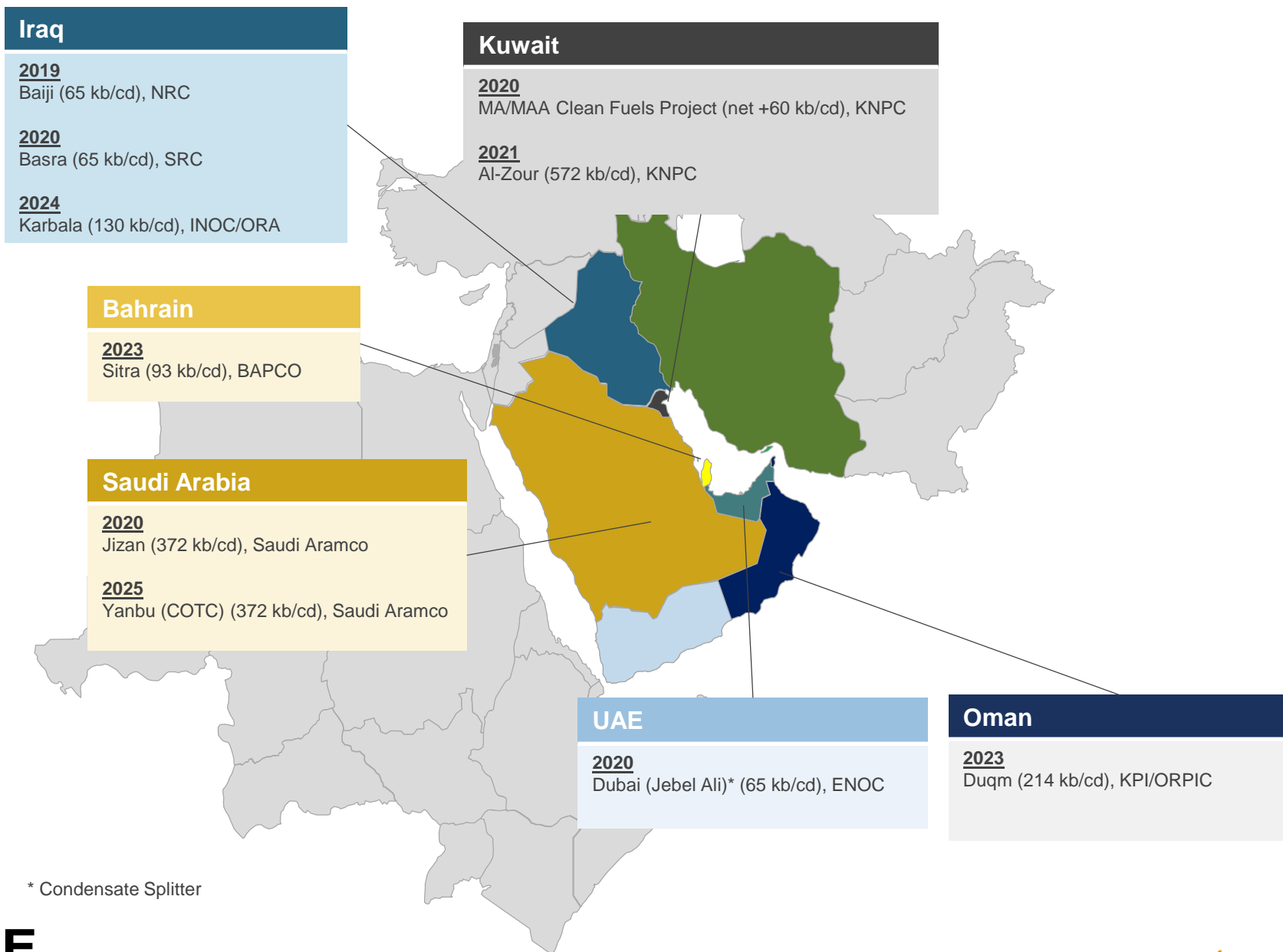
China's Ethylene Deficit



China's Paraxylene Deficit

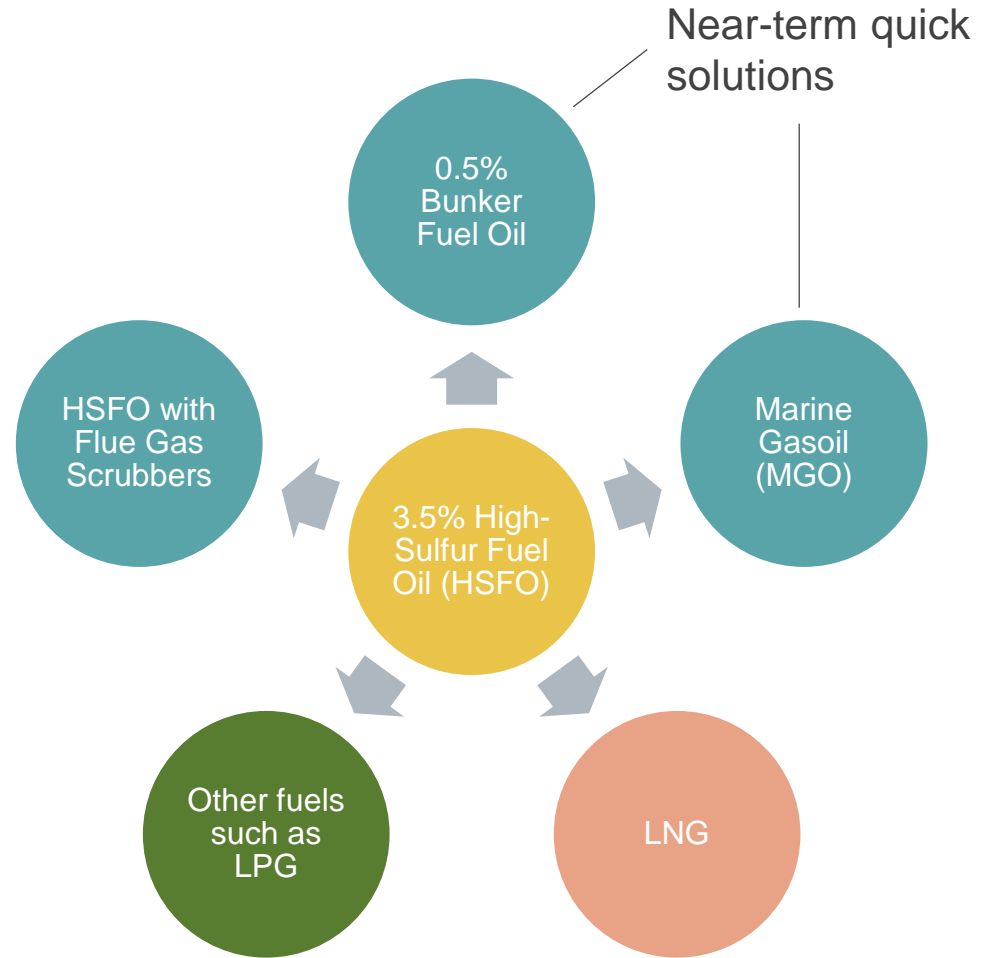
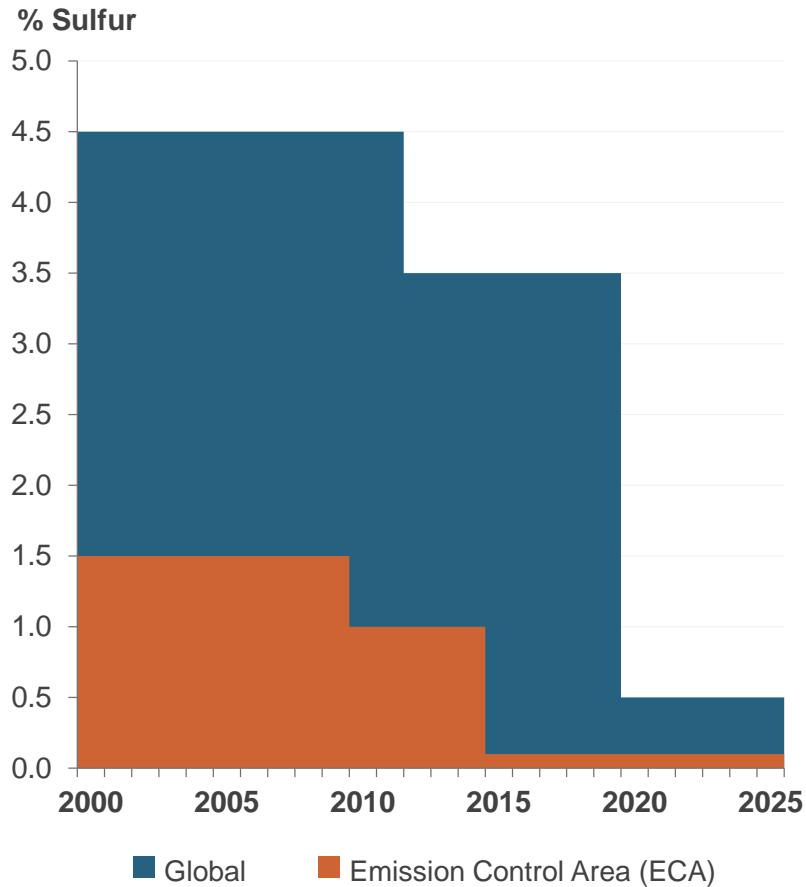


Middle East—Refinery CDU Projects (Firm & Likely, Up to 2025)



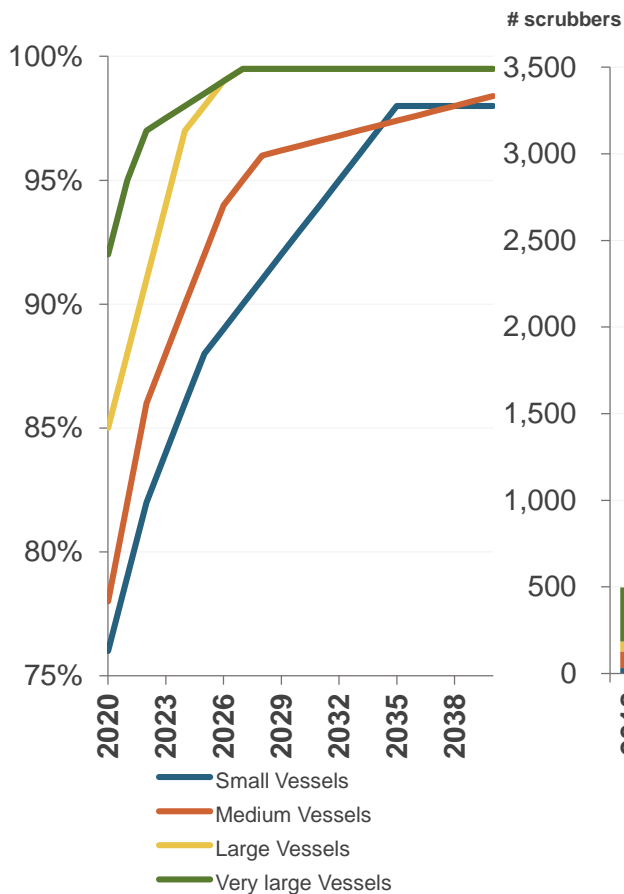
IMO 2020—Several Solutions, All Costly

Sulfur Cap by Region

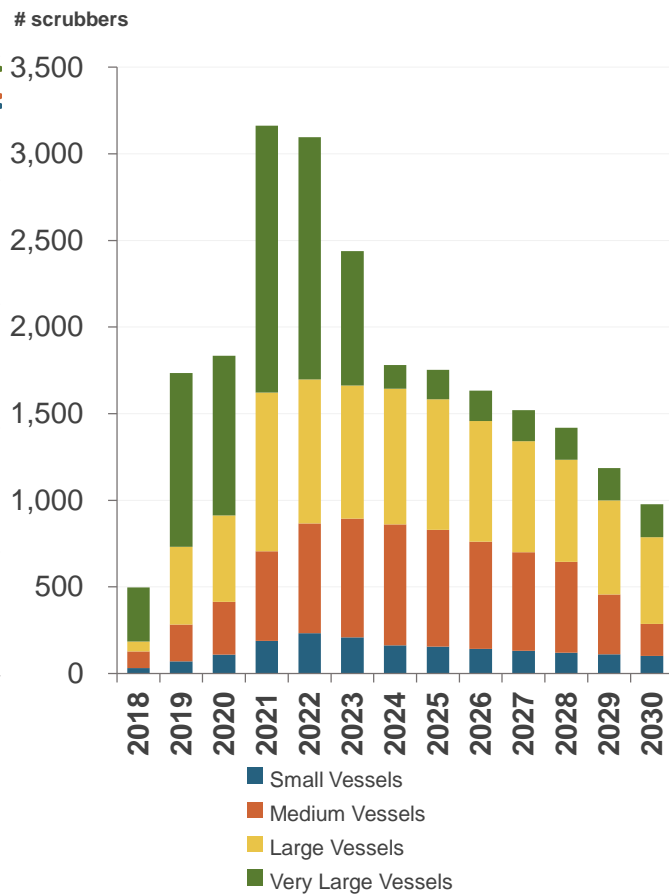


IMO 2020: Forecast Compliance and Scrubber Uptake

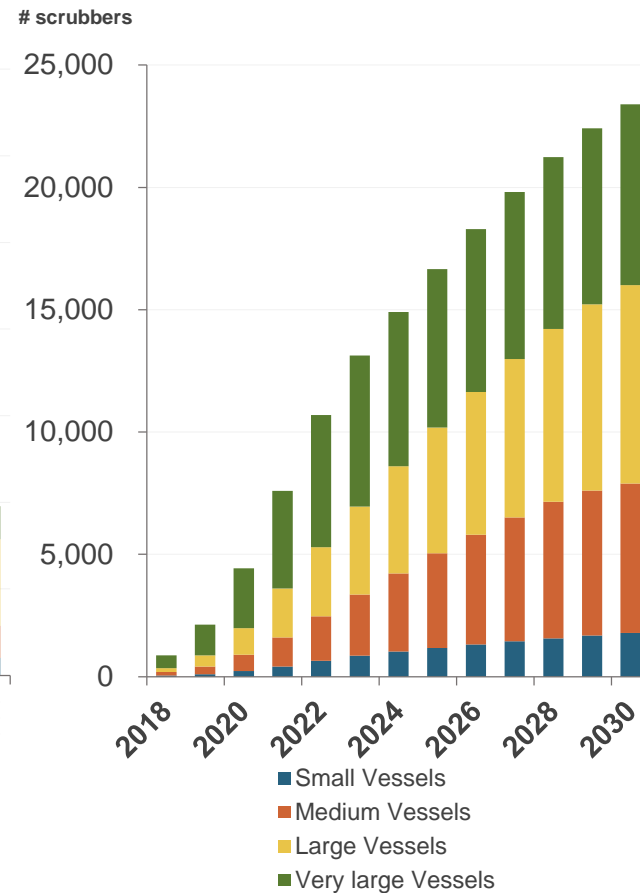
Global Sulfur Cap Compliance



Annual Scrubber Installations



Vessels Equipped with Scrubbers

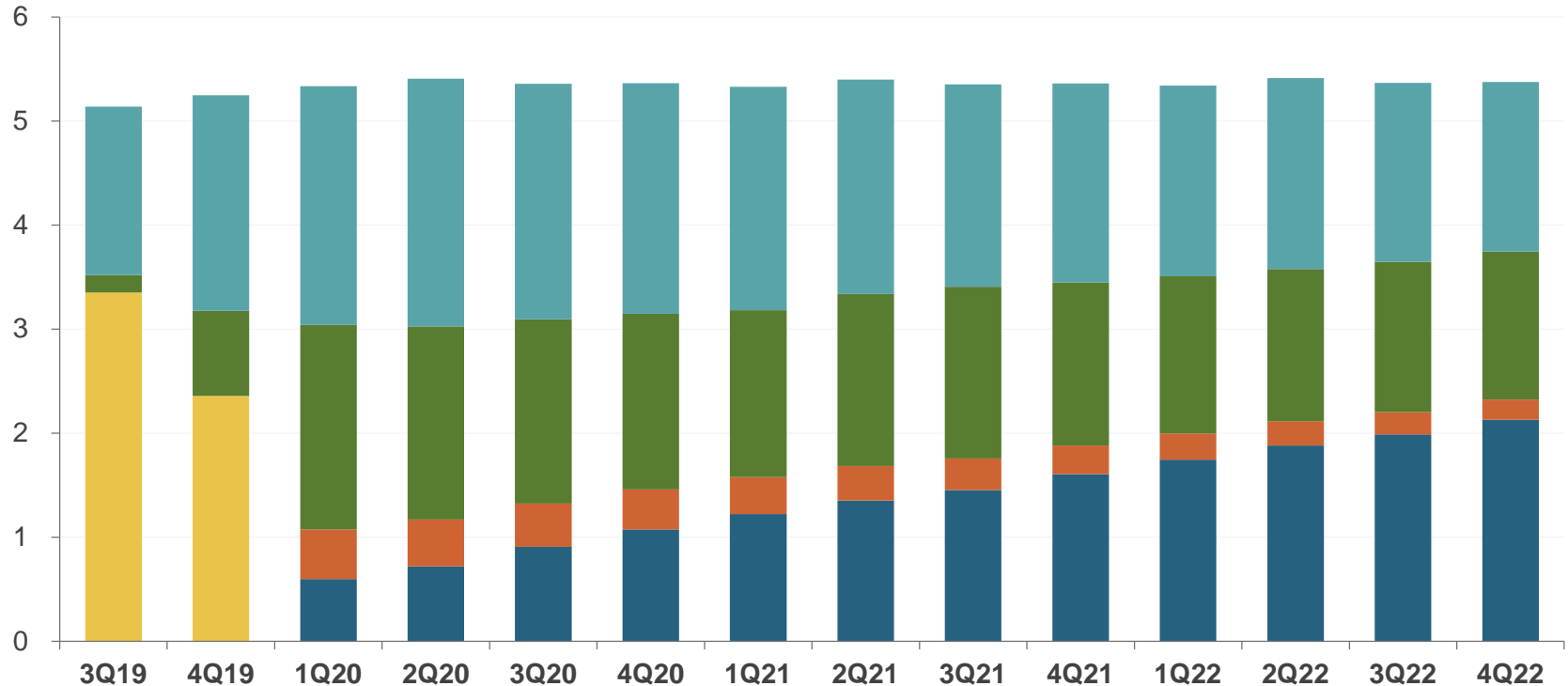


Transition to IMO 2020 Starts (In Earnest) in 4Q 2019

Shipowners and bunker suppliers will lead the front-line change; refiners will be stressed, while logistics systems will need to be flexible

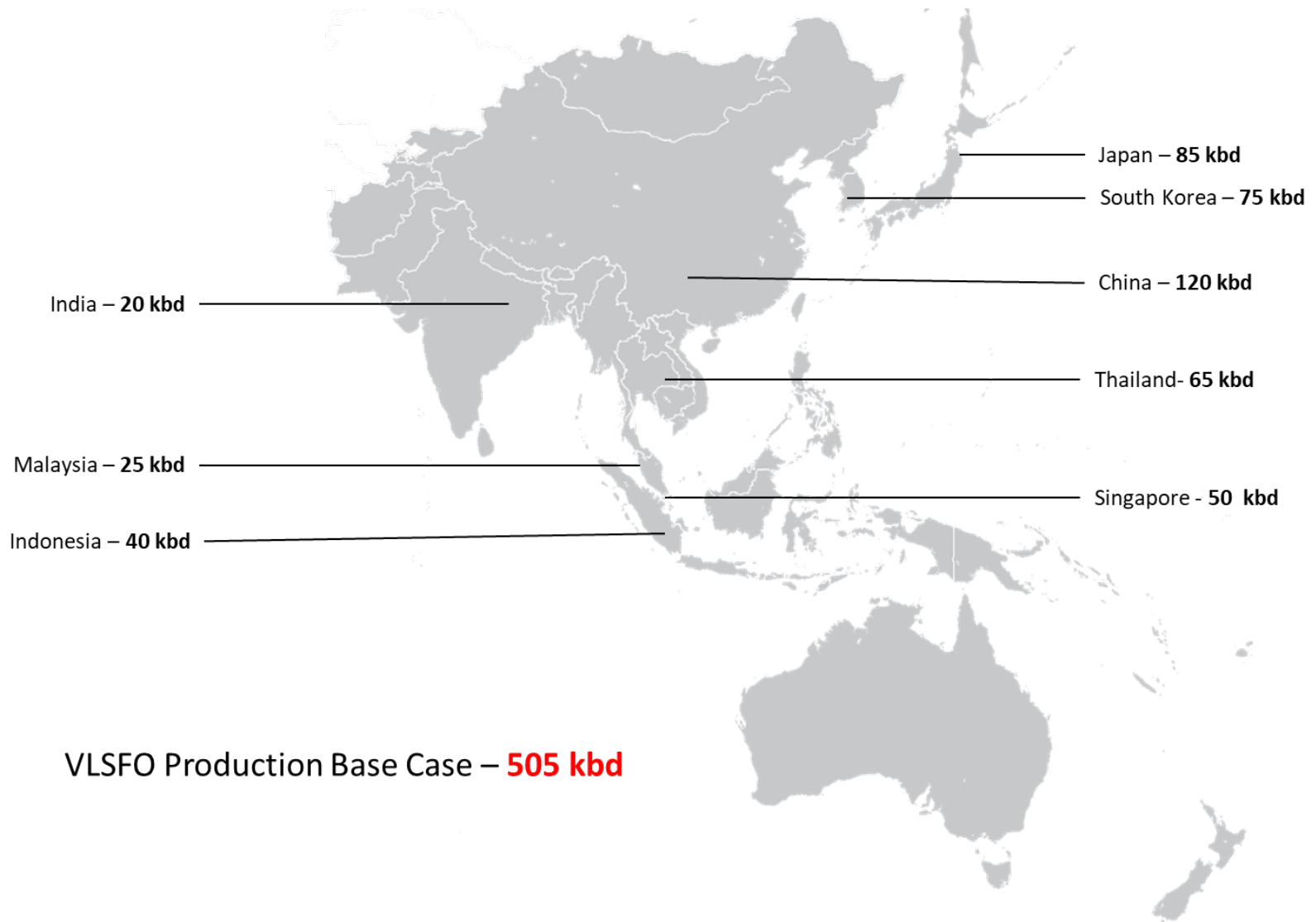
IMO Bunker Fuel Composition

mmb/d



■ Post-2020 Scrubbed HSFO
 ■ Post-2020 Non-Compliant HSFO
 ■ Pre-2020 HSFO
 ■ 0.5% S Fuel
 ■ Gasoil

Asia Is Well Prepared to Supply VLSFO in the New Low S World

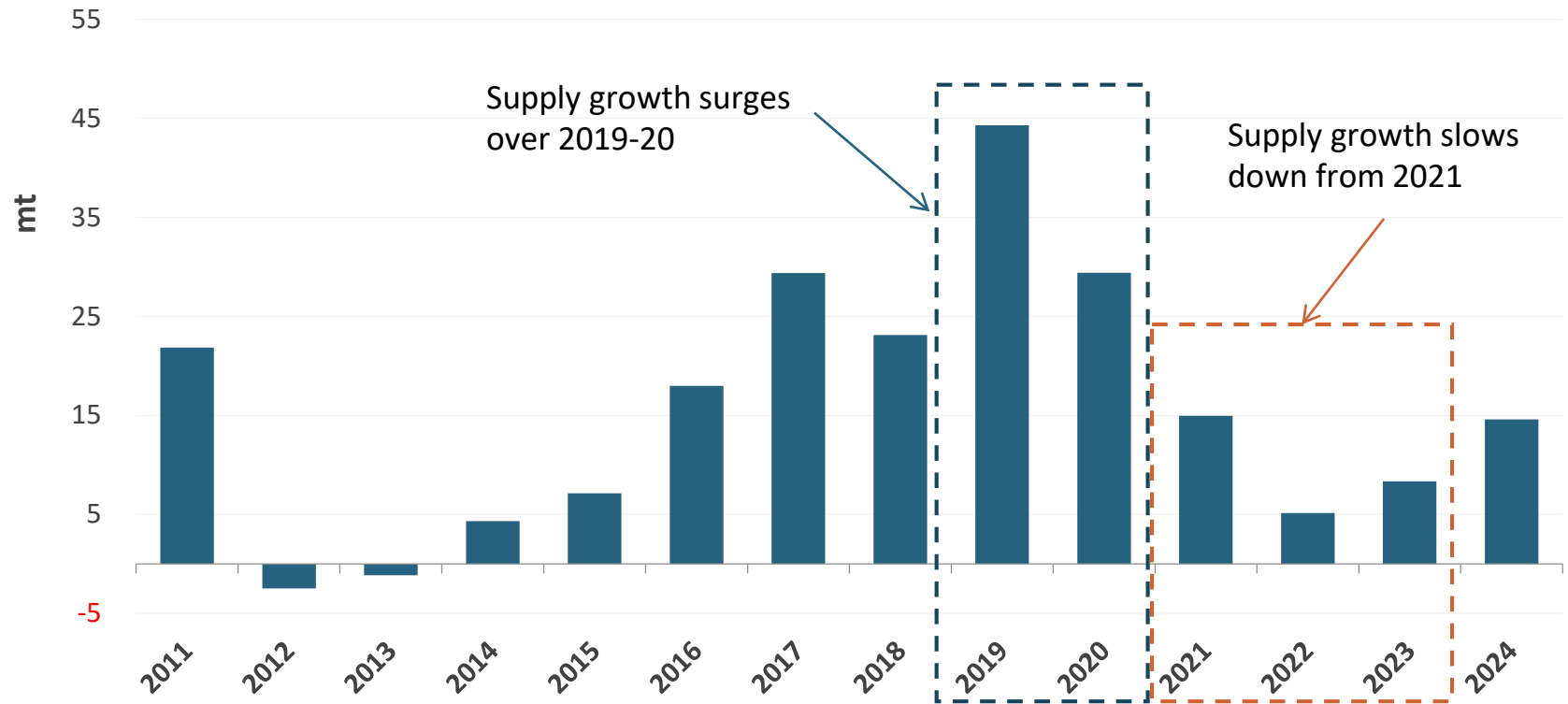


VLSFO Production Base Case – **505 kbd**

Gas/LNG Market

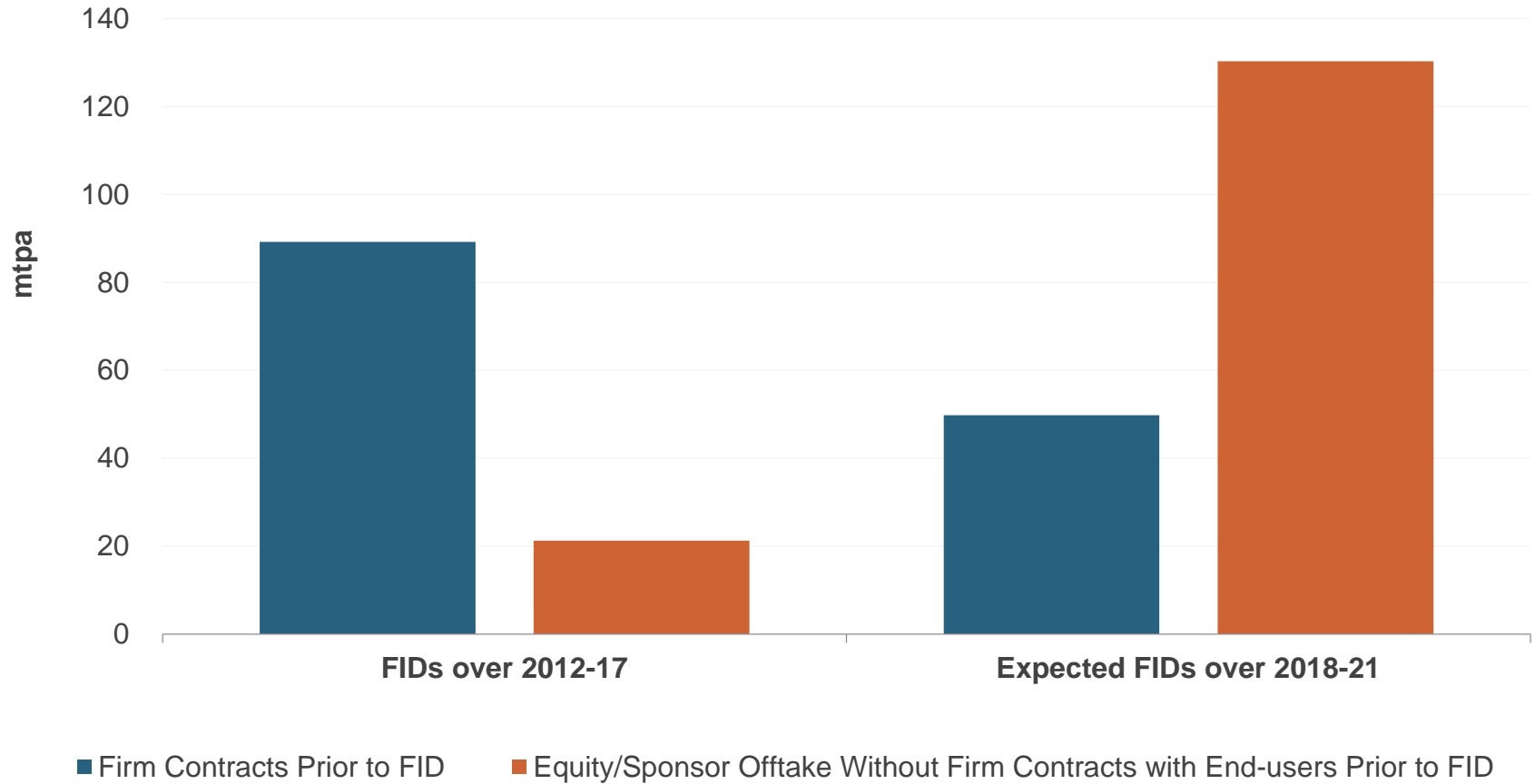
Supply Surges Then Suddenly Stops

Global LNG Supply Growth



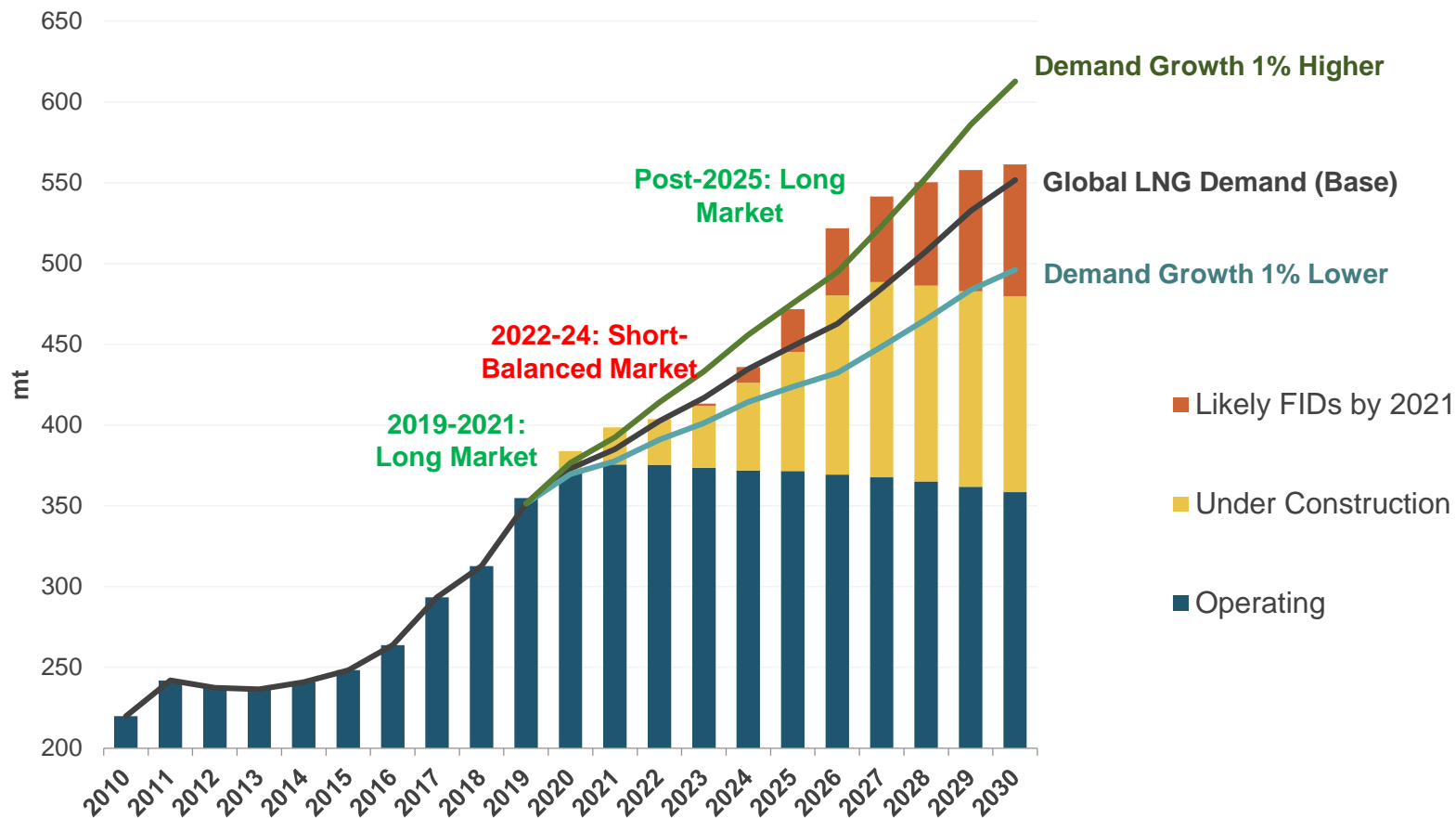
Projects Looking to Take FID Without Firm End-User Contracts

Share of FIDs Without Firm Contracts to Grow



Boom-and-Bust Cycles Alive and Well, Demand Growth a Wild Card

Global LNG Supply-Demand Balance



*The above supply numbers factor in unplanned outages from 2020 onwards



Thank You

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Further Information:



Global Headquarters

FGE London:
FGE House
133 Aldersgate Street
London, EC1A 4JA
United Kingdom
Tel: +44 (0) 20 7726 9570

Asian Headquarters

FGE Singapore:
8 Eu Tong Sen Street
#20-89/90 The Central
Singapore 059818
Tel: +65 6222 0045
Fax: +65 6222 0309

Global Offices

Tokyo:	+81 (3) 6256 0299
Honolulu:	+1 (808) 944 3637
Los Angeles:	+1 (714) 593 0603
Beijing:	+86 (10) 5106 8410
Houston:	+1 (281) 819 1983