



Changing Global Landscape for Base Oils

2nd Asian Industrial Lubricants Conference

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ICIS

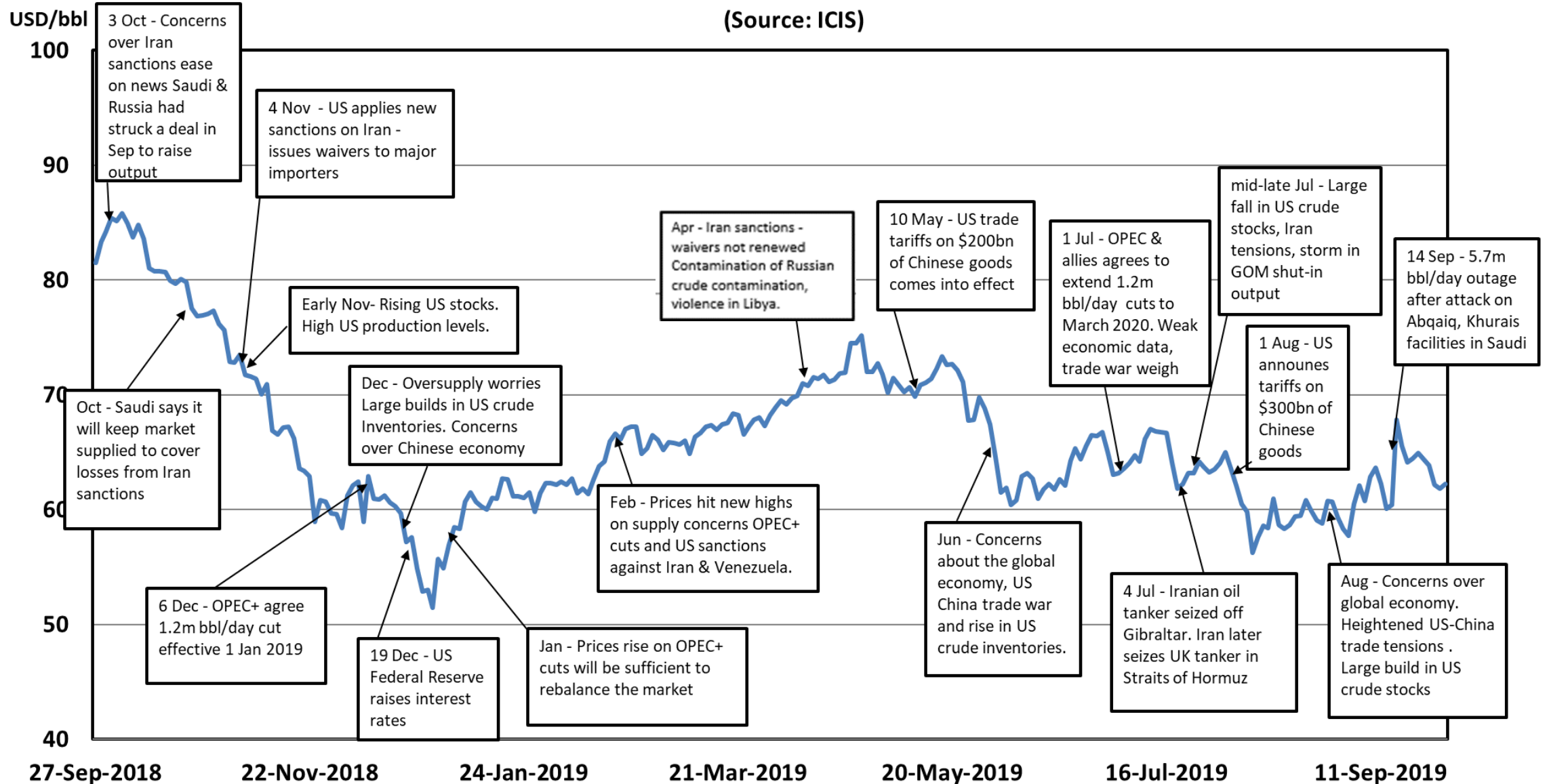


Agenda

- ▶ Fundamentals affecting base oils market
 - ▶ Crude trend
 - ▶ US-China trade war
- ▶ Industrial lubricants in the base oils world
 - ▶ Demand, usage
 - ▶ Base oils price trends
- ▶ Global base oils supply and demand
 - ▶ China, India base oils demand
- ▶ Changing dynamics of Group I and Group II base oils
 - ▶ Iran Group I exports
 - ▶ IMO 2020
 - ▶ Growth of Group II
 - ▶ Rising influence of Middle East base oils

2018-2019 – Crude lower as weaker economic outlook weighs on market sentiment

(Source: ICIS)

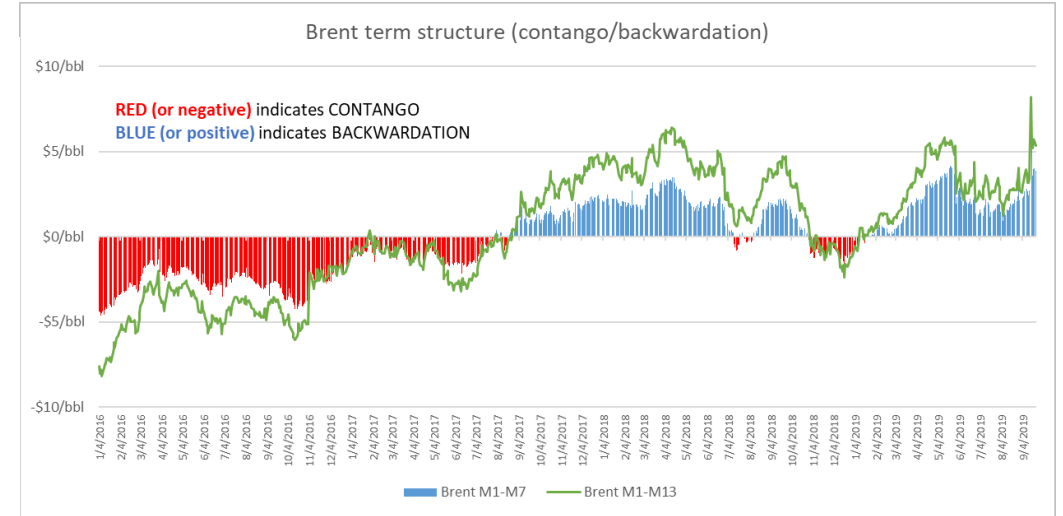
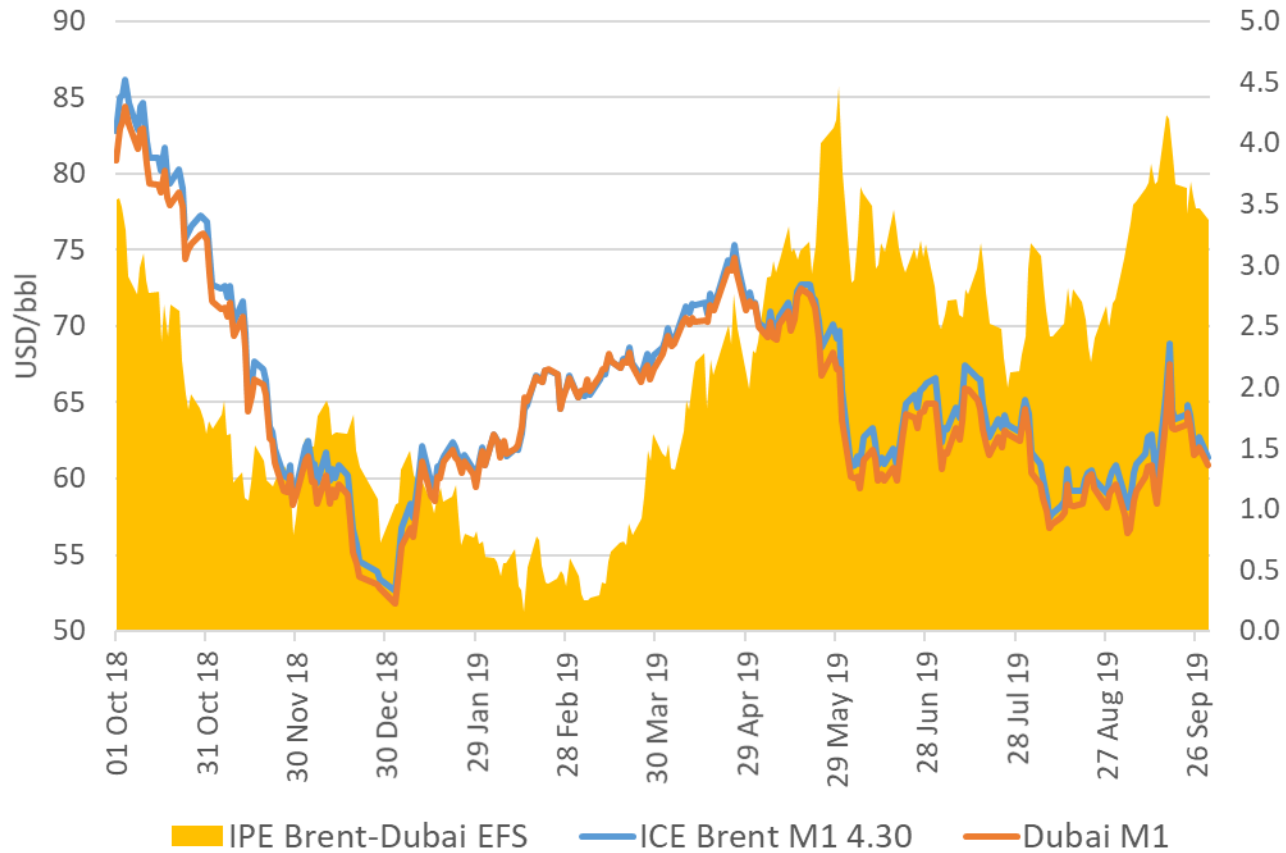


— Front Month Brent crude (BFOE)

Changes in the market structure in 2019

Brent-Dubai EFS 2018-2019

(Source: ICIS Pricing)



M1-M3 Dubai Spread remains strongly backwardated

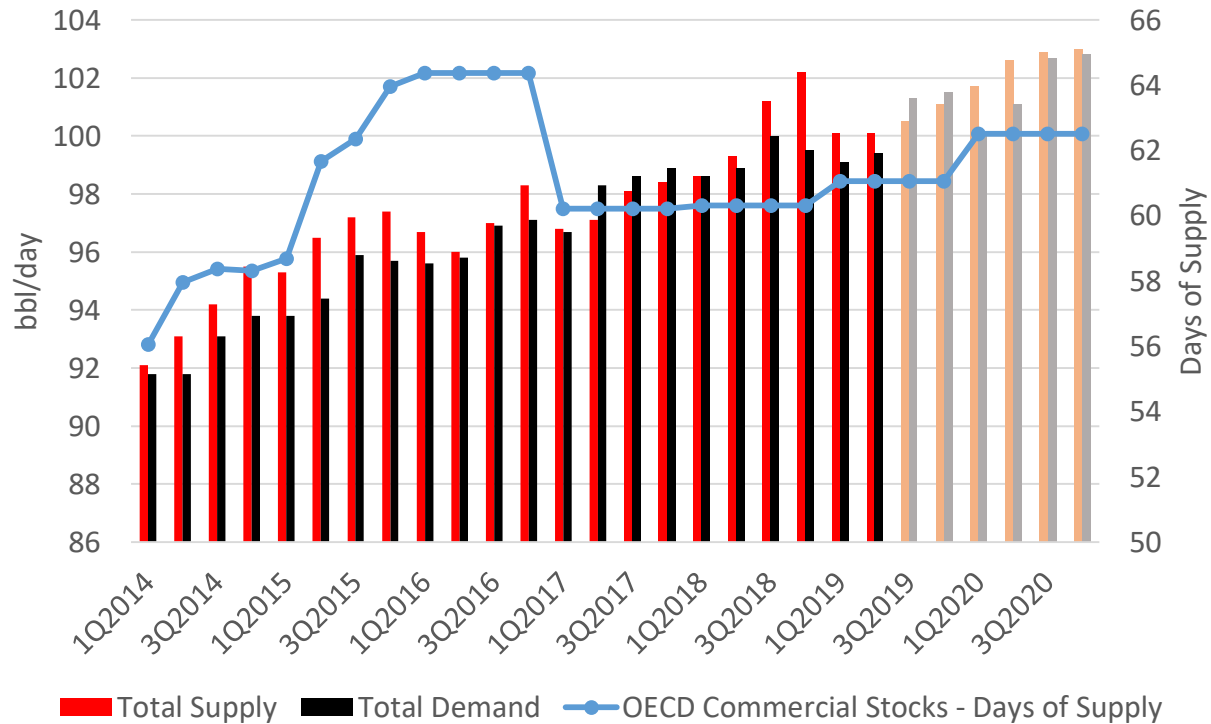
(Source: ICIS Pricing)



Oil market tighter in H2 2019 but oversupply expected in H1 2020

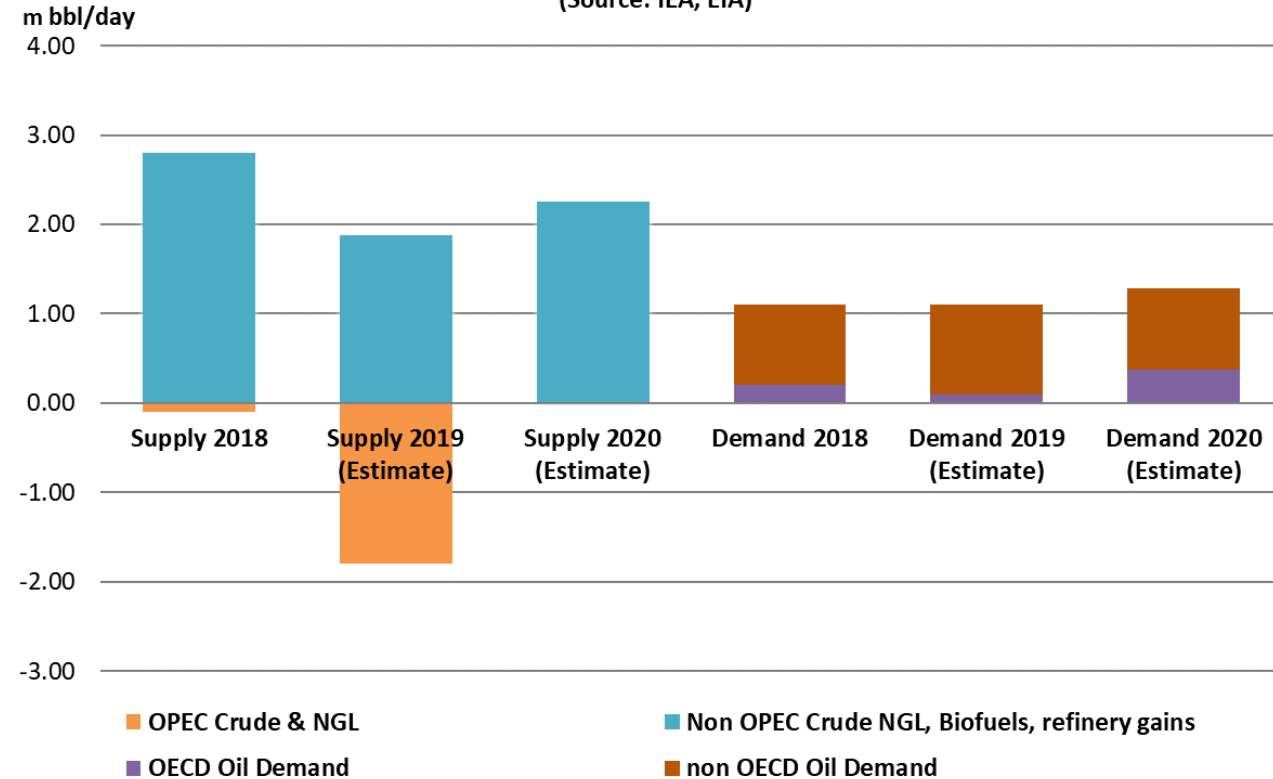
Supply and Demand Balance 2014-2019

(Source: IEA, EIA)

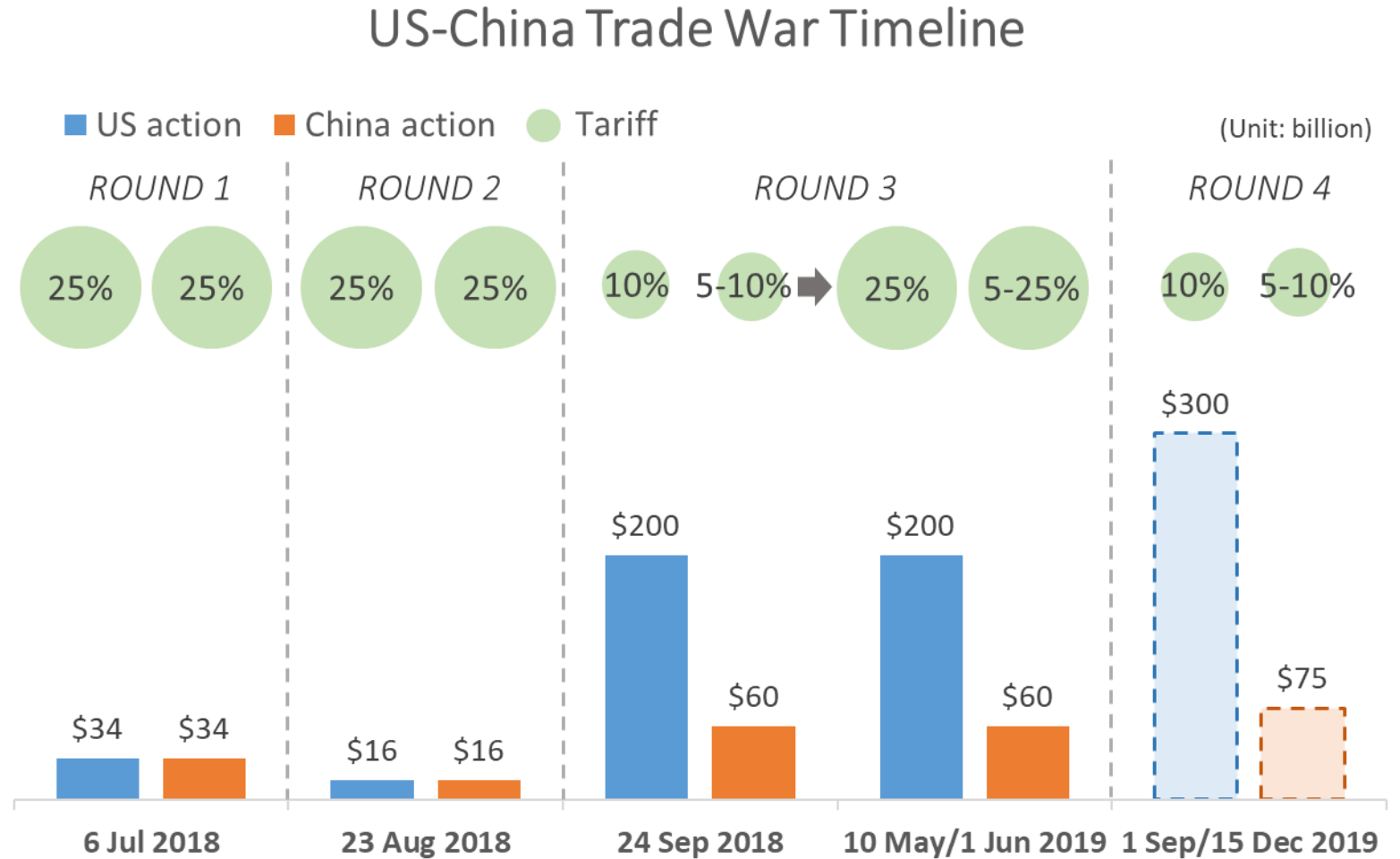
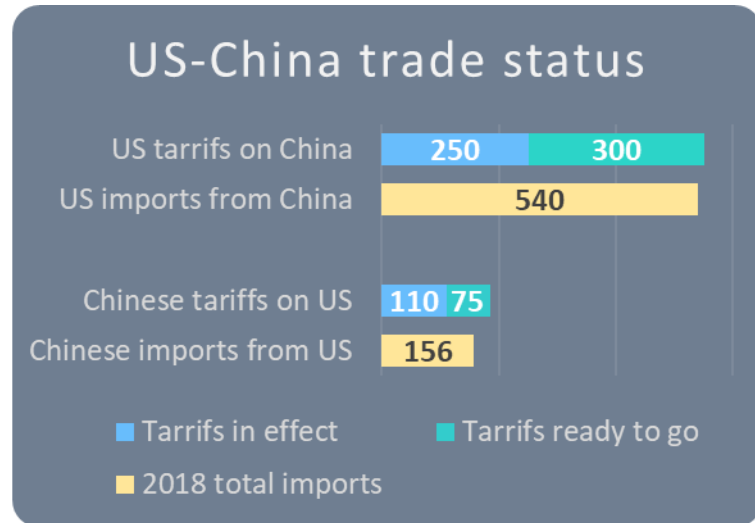


Supply and Demand Growth 2018-2020

(Source: IEA, EIA)

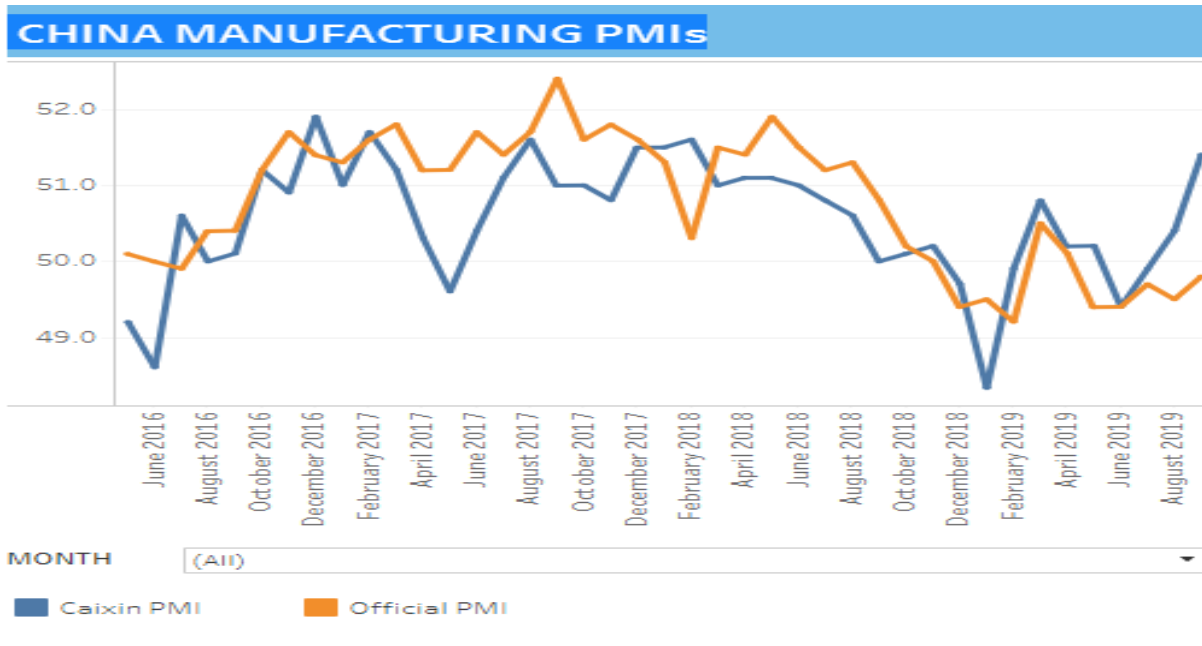


Growing political and economic rivalry between US and China



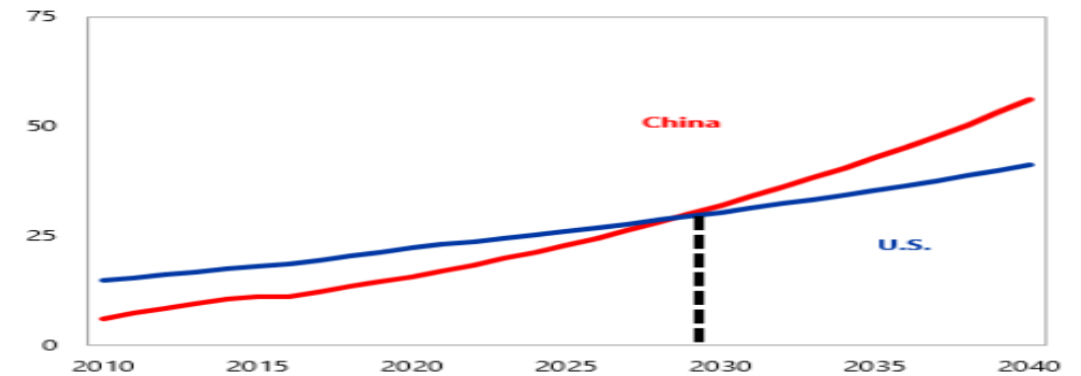
Source: USTR, Chinese Ministry of Commerce

China drives global economic growth



Quality as well as quantity China's GDP could overtake the United States by 2030.

(nominal GDP in USD trillions, assuming market exchange rate of 2017)



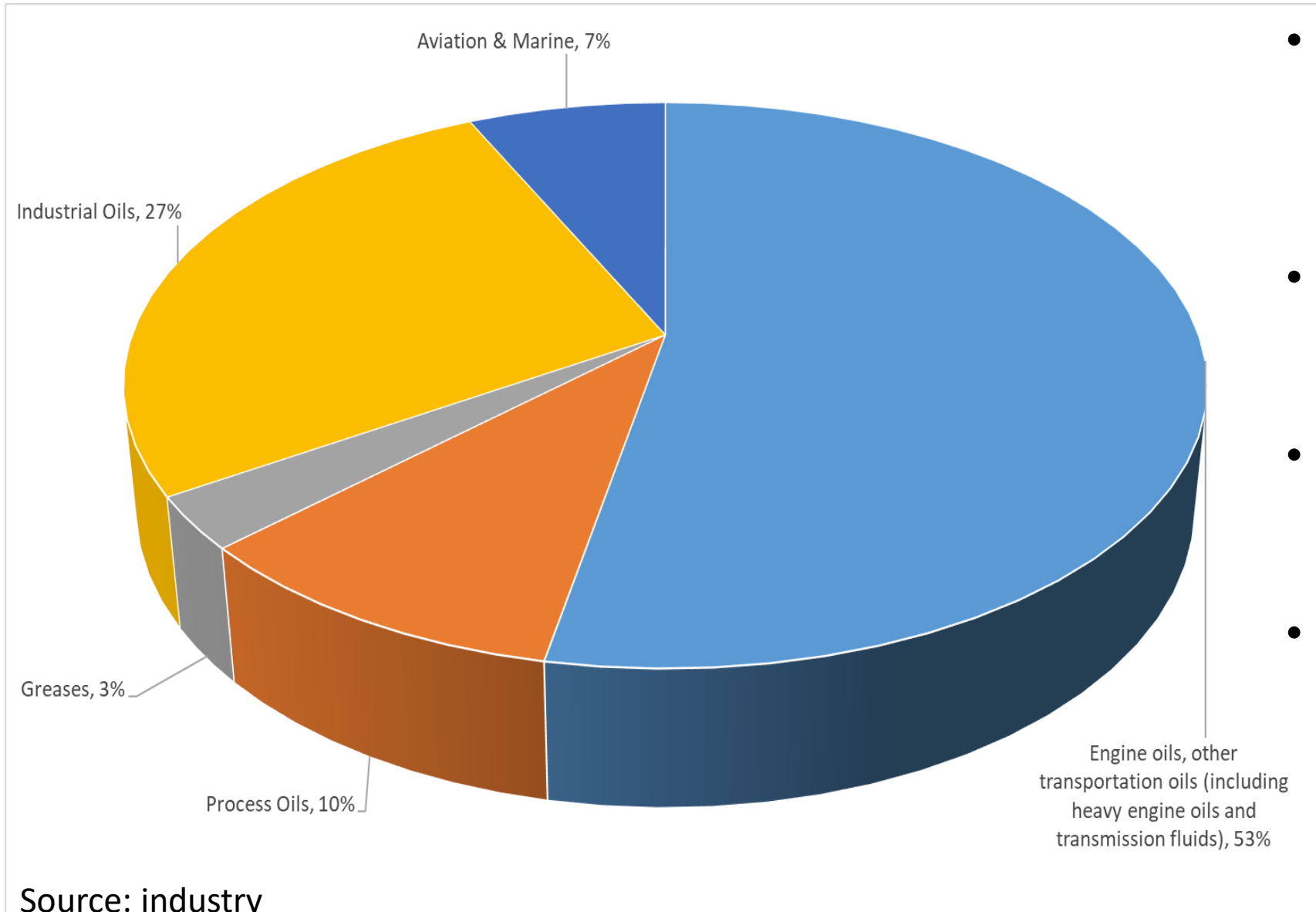
Source: IMF staff estimates.

- ▶ China remains the main engine of global economic growth
 - ▶ Trade, debt and economic reform remain longer-term issues
- ▶ China will overtake the US as the world's largest economy
 - ▶ Emphasis on "when" rather than on "whether"
- ▶ Global asset portfolios will rebalance towards Chinese markets to reflect
 - ▶ China's place in the world economy
 - ▶ China's strong growth prospects for investors yearning for yield
- ▶ Trade dispute a catalyst because it will accelerate the diversification away from US market

Industrial lubricants in the base oils world



Global base oils demand segments



- Transportation sector still the biggest segment of the base oils market
- Likely to remain so in coming years
- Industrial oils segment is second biggest
- Limited new technological changes/applications

Common base oils applications in industrial lubricants

Group I
Group II
Naphthenics

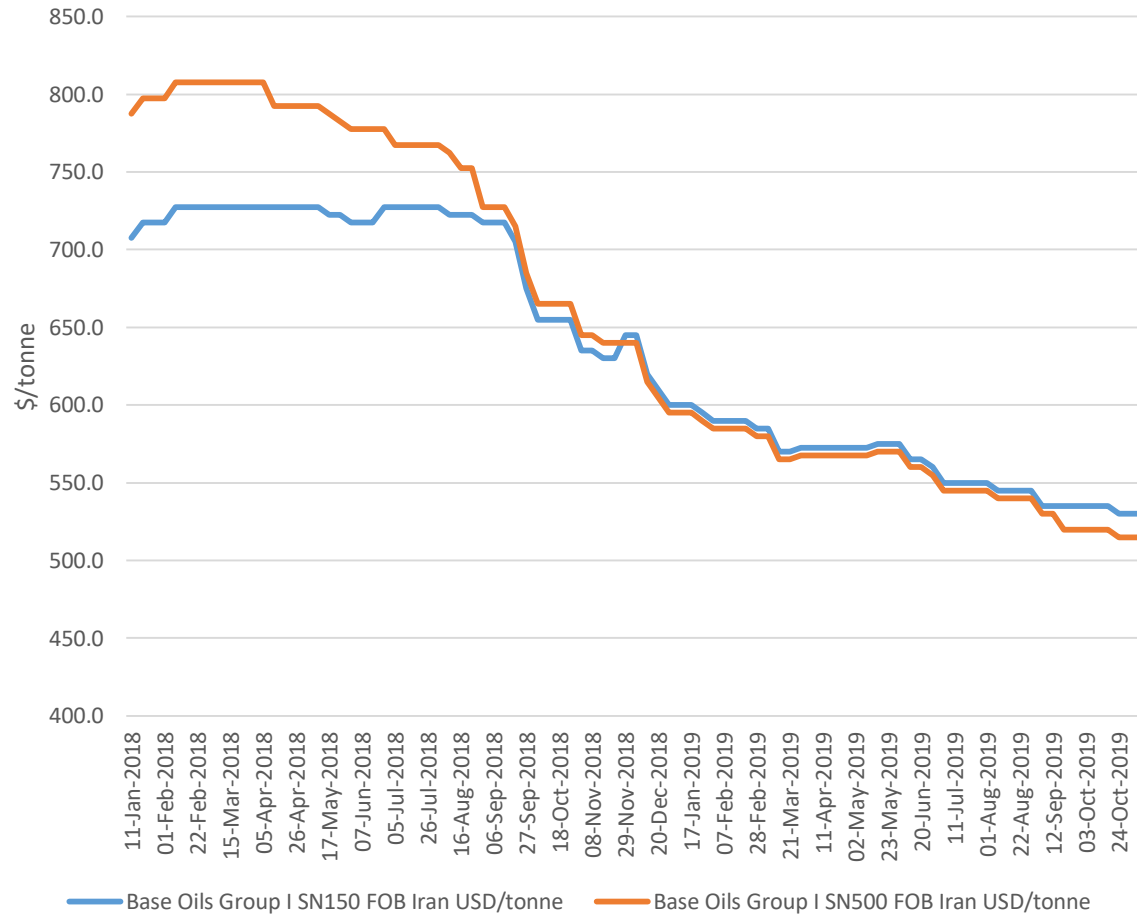
- Most commonly used
- Gears
- Metalworking, pumps

Group III
Group III+

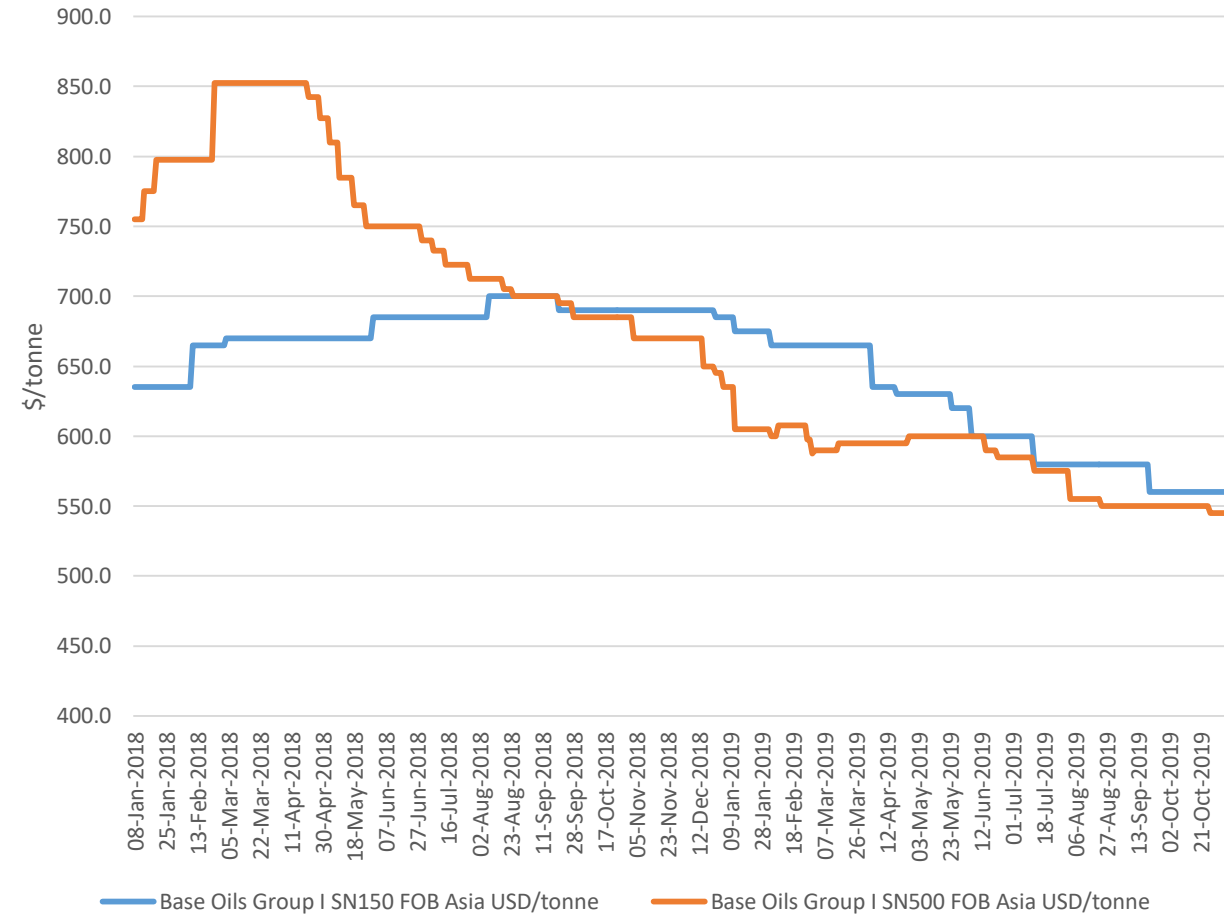
- Higher VI
- Extreme temperature applications
- More specialized usage

ICIS Group I price trends

Group I Iran prices

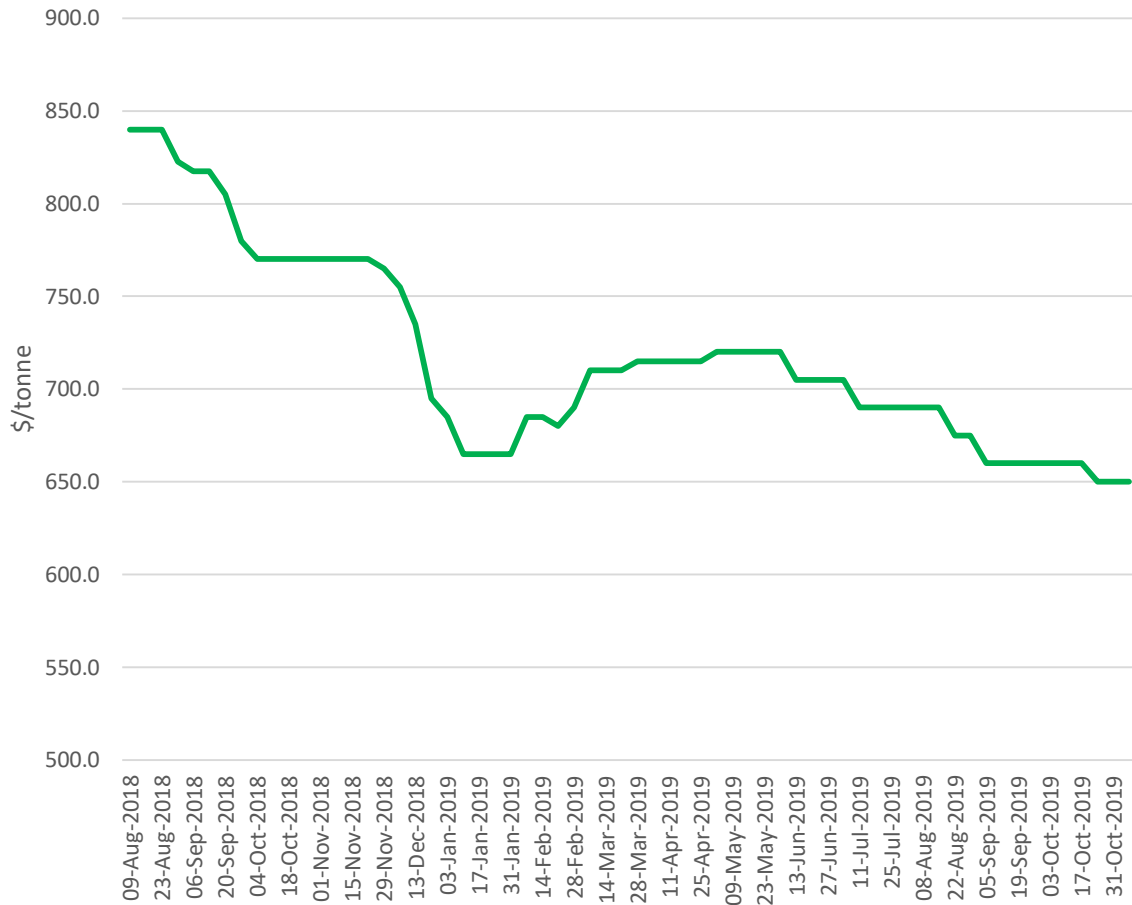


Group I Asian prices

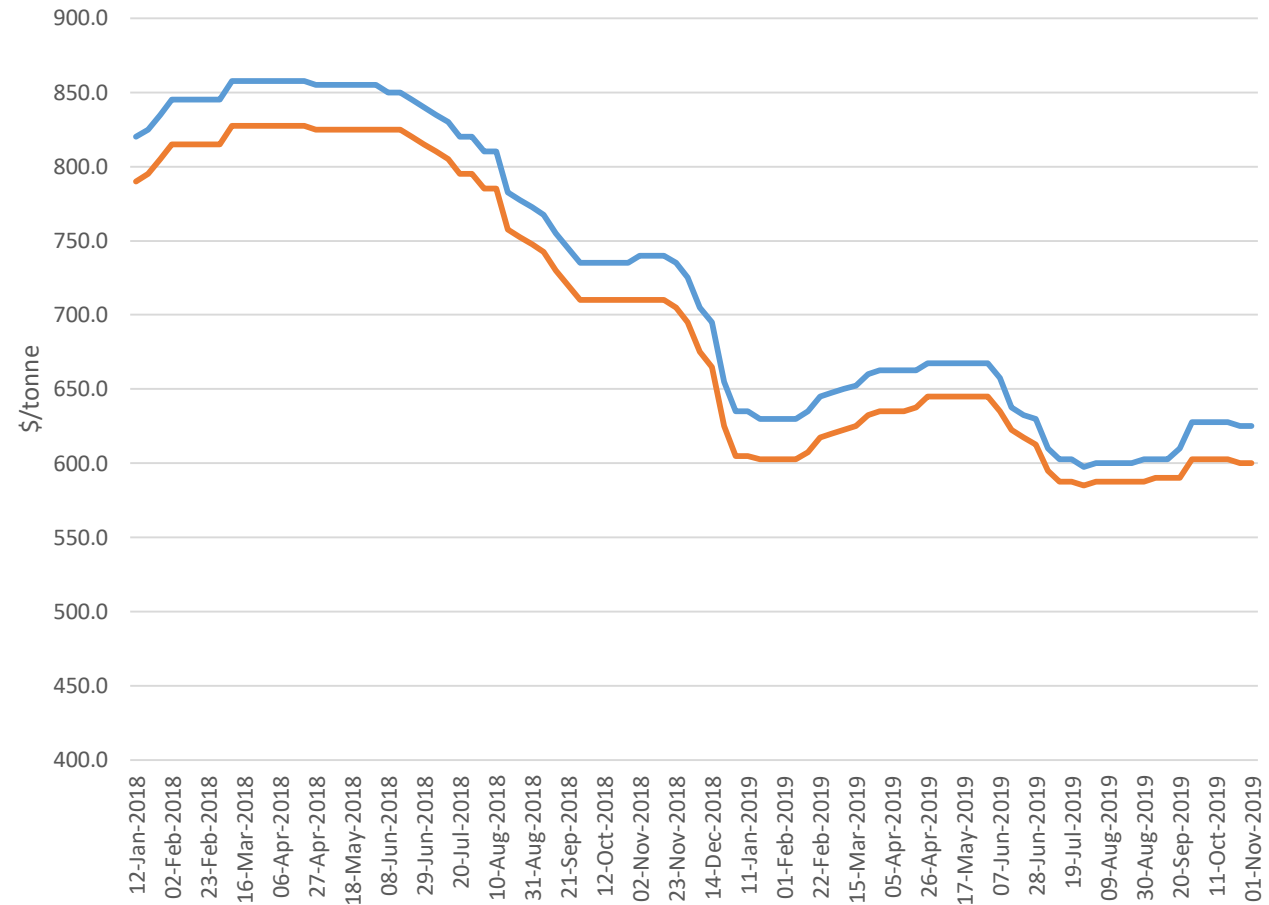


ICIS Group II price trends

Base Oils Group II 500N CFR UAE



Base Oils Group II 500N FOB/CFR NE Asia

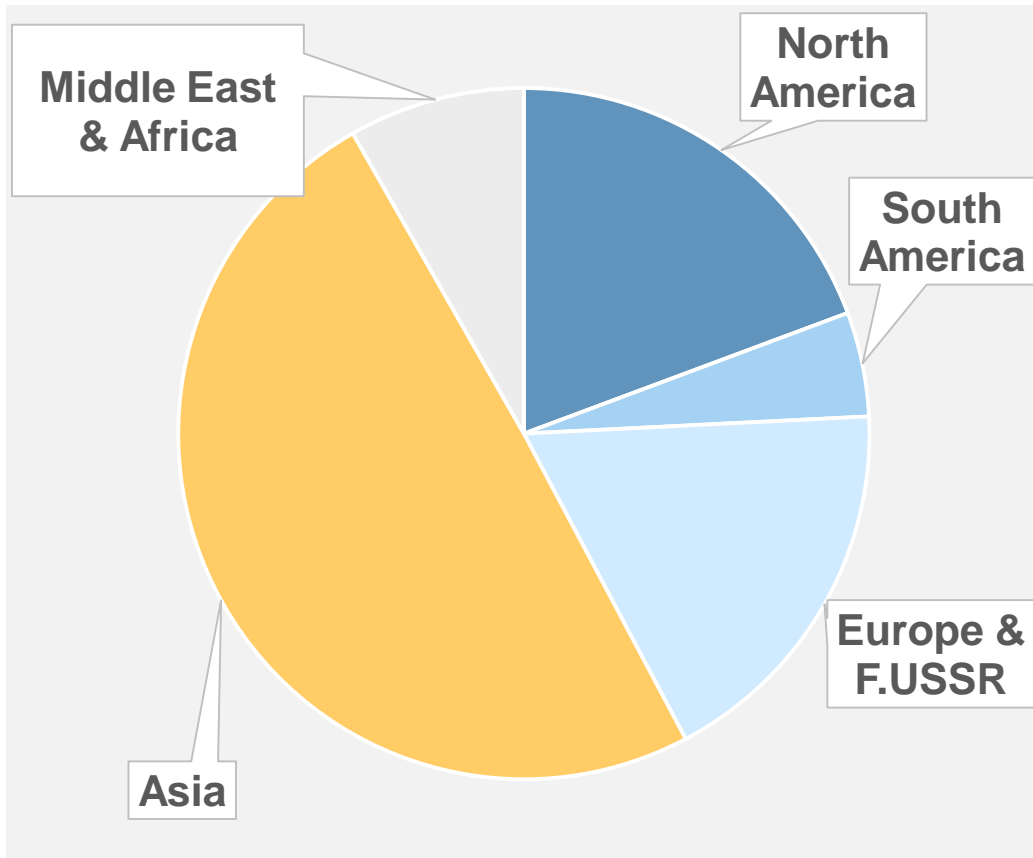


Global base oils supply and demand

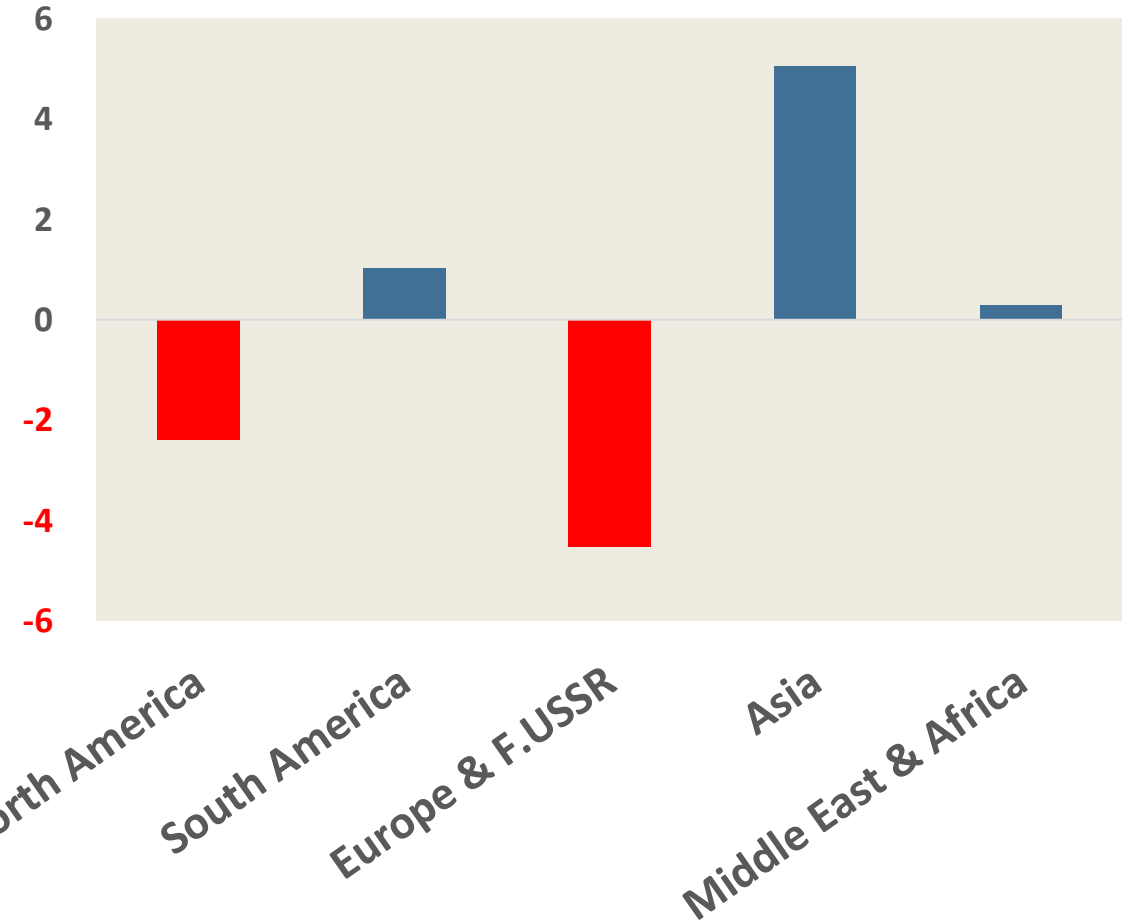


Global Base Oils Demand: Asia Dominates

Current Demand Profile: ~ 37m tonnes

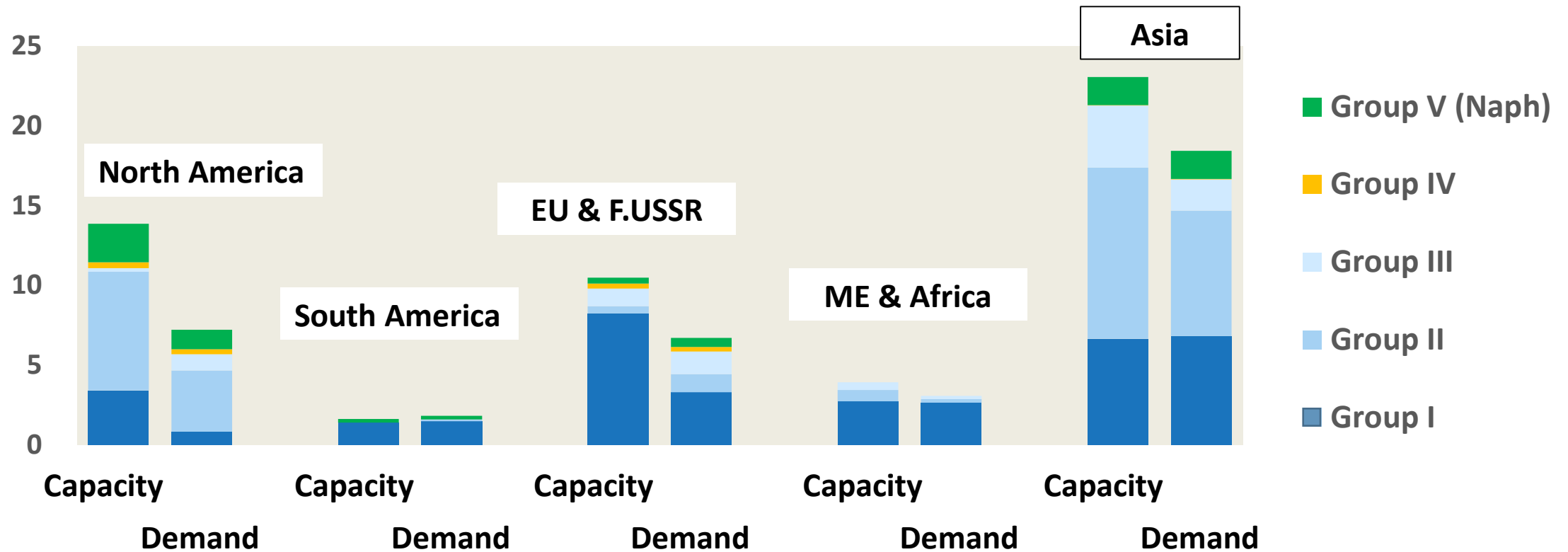


**Last Decade:
Incremental Demand, million tonnes**



Growth in Asian and developing economies barely compensated for loss of demand in mature markets

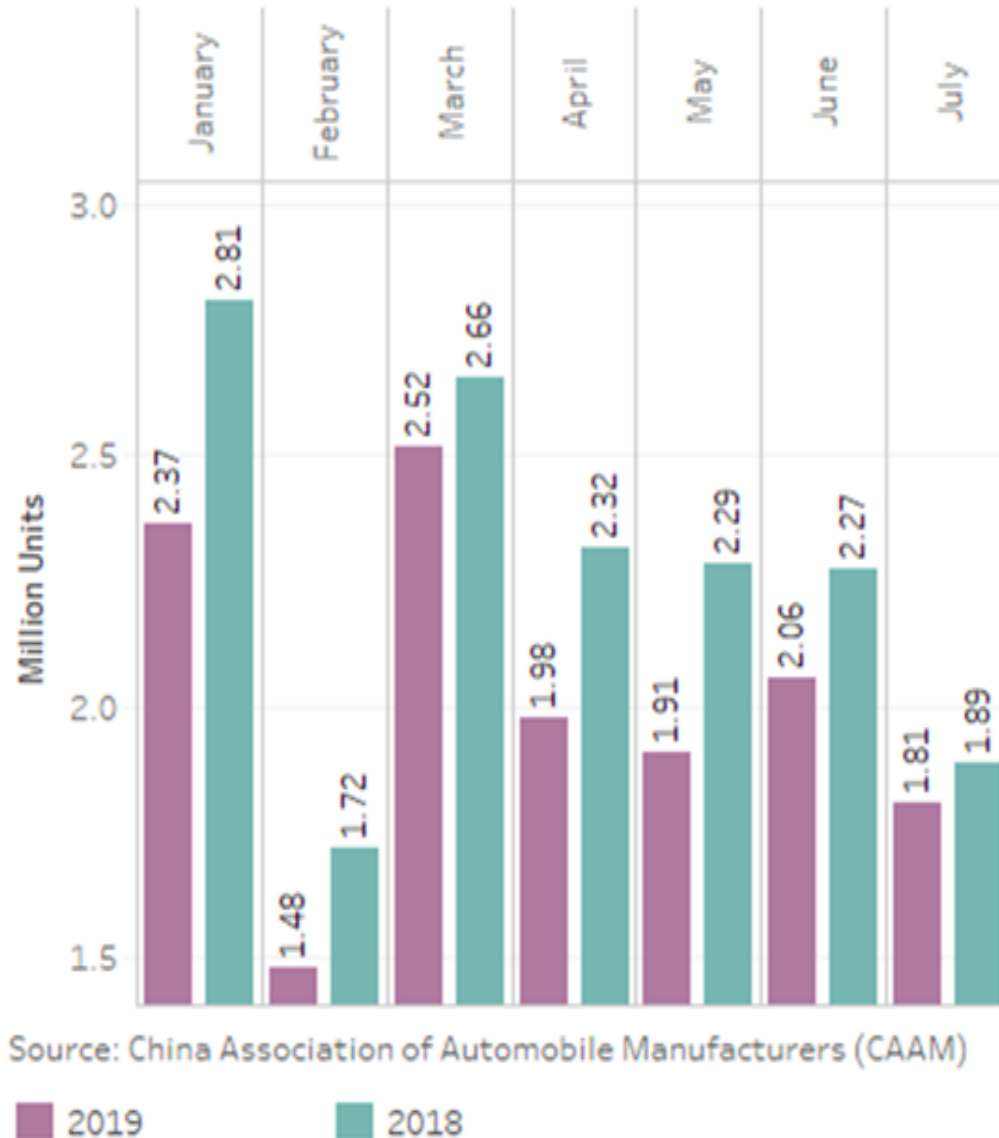
Global Base Oils Capacity vs Demand: Regional Dimensions 2017 (million tonnes)



Regional imbalances are evident for all the key groups, generating trade flows

NB: 2017 Middle East capacity count is affected by plant closures (GTLs...), delays, etc.

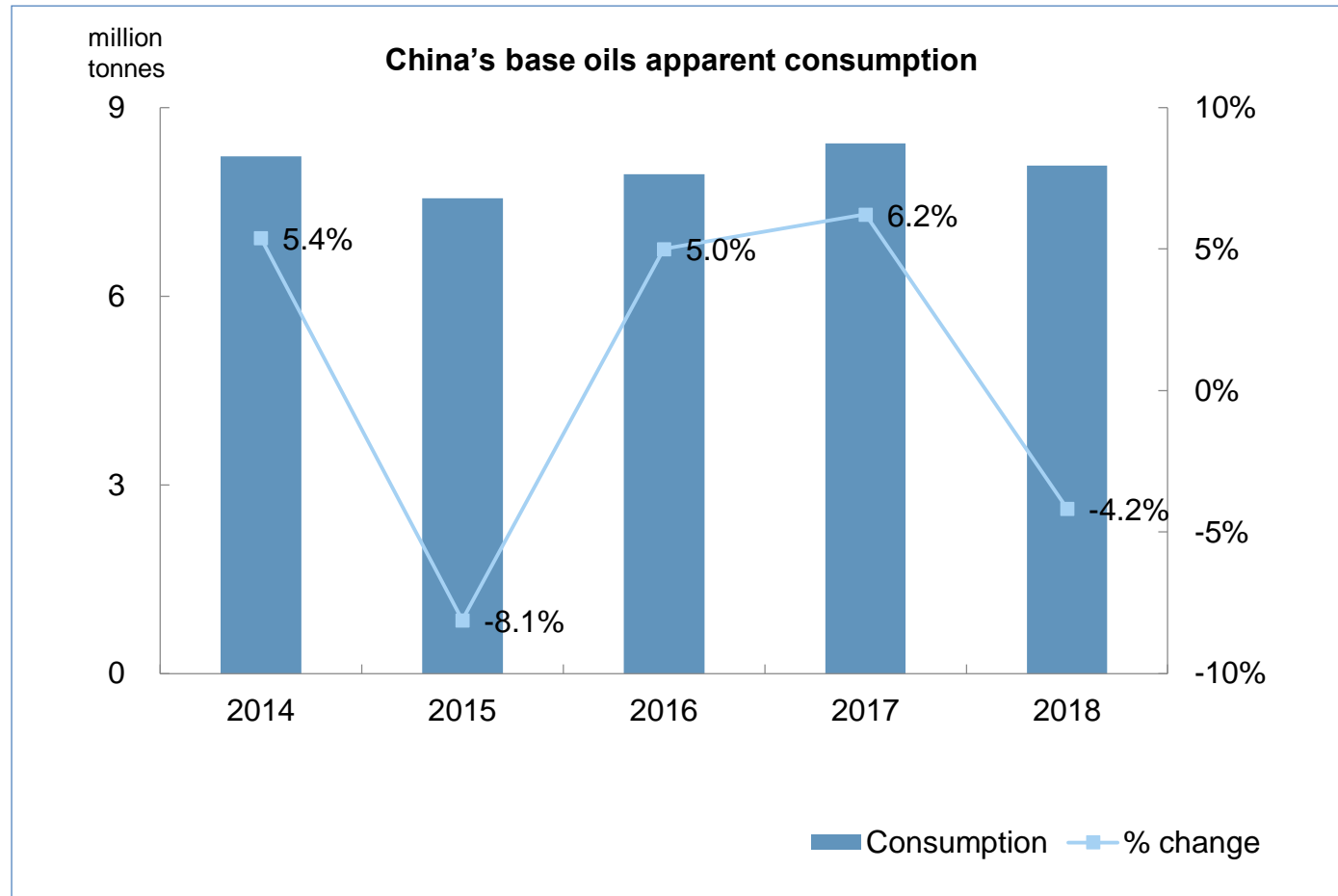
Could demand be affected by slower auto sales?



Source: China Association of Automobile Manufacturers (CAAM)

- China is world largest automobile market
- China's vehicle sales numbers 2018 vs 2019
- Vehicle sales are slowing
- China Mulls Goal of 60% of Auto Sales to Be Electric by 2035: Bloomberg News

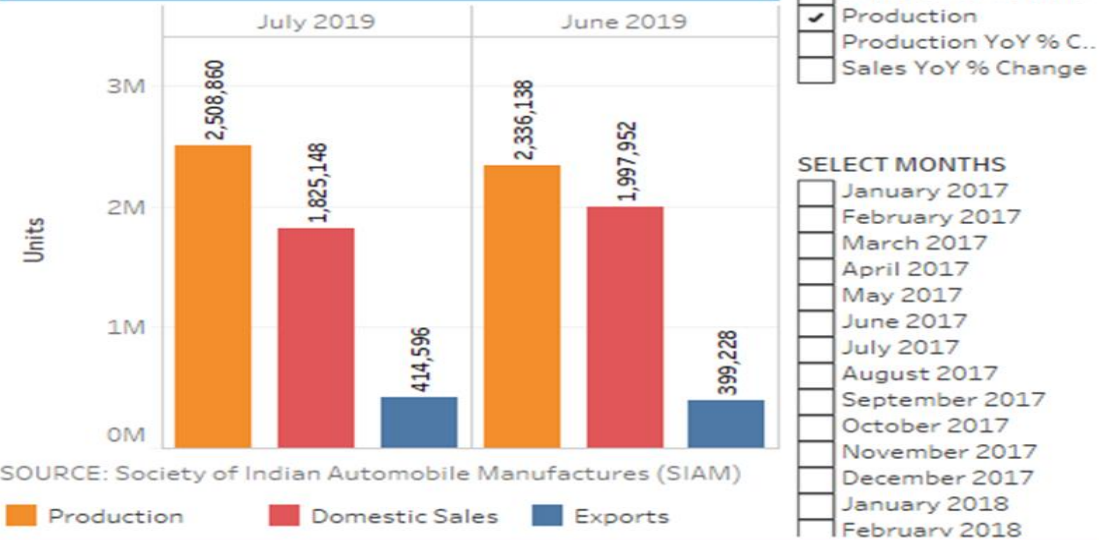
China's base oils demand analysis



Source: ICIS Supply & Demand Database

- ▶ China's base oils consumption fell to 8.08m tonnes in 2018
- ▶ Downstream lubricants sector affected by decline in industrial and manufacturing performance – reduced Group I demand
- ▶ Group II/III demand stable to soft on lower demand for automotive lubricants due to falling car sales

INDIA VEHICLE PRODUCTION, SALES AND EXPORTS



FILTER BY CATEGORY

- Domestic Sales
- Exports
- Exports YoY % Cha..
- Production
- Production YoY % C..
- Sales YoY % Change

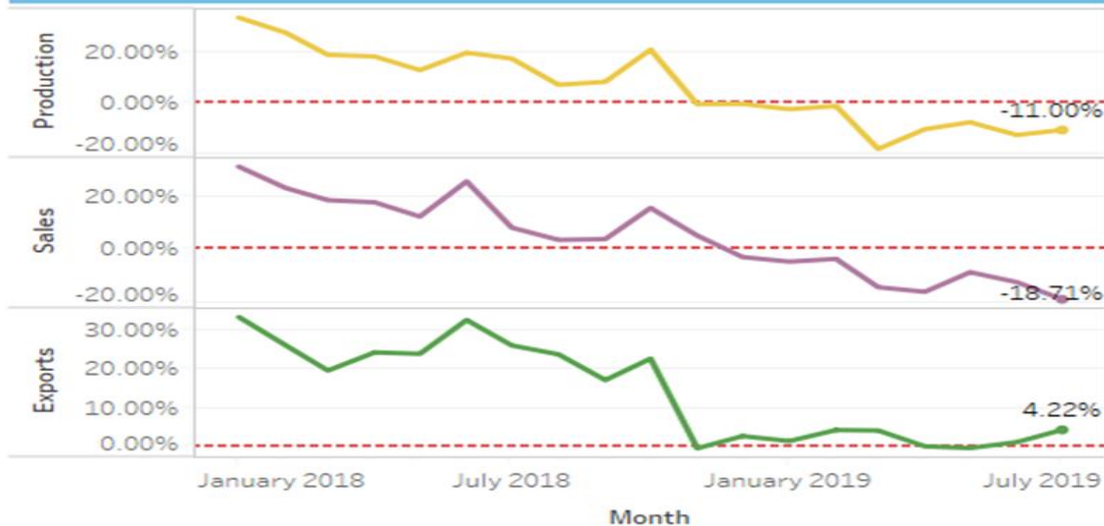
SELECT MONTHS

- January 2017
- February 2017
- March 2017
- April 2017
- May 2017
- June 2017
- July 2017
- August 2017
- September 2017
- October 2017
- November 2017
- December 2017
- January 2018
- February 2018

India's car sales have been slowing

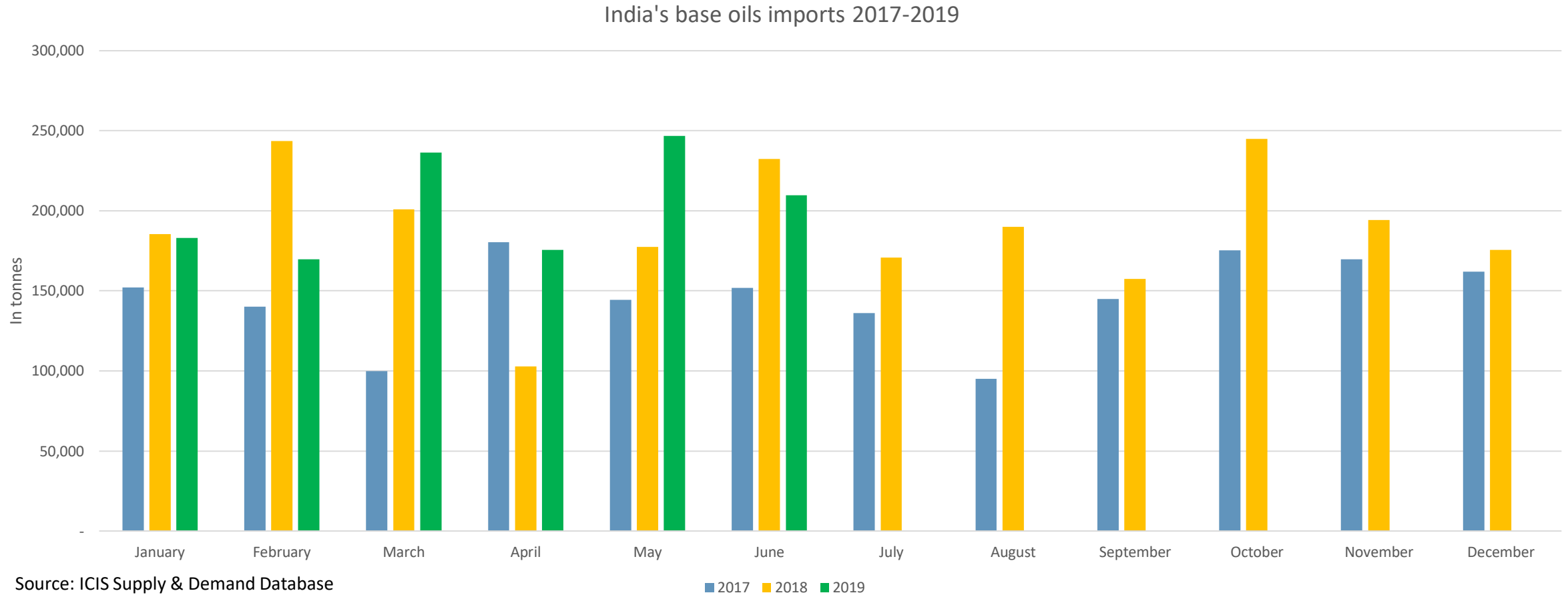
- Base oils demand from India's passenger car segment not encouraging
- Year-on-year car sales have been slowing
- Domestic monthly sales also showing signs of softening

YEAR ON YEAR % CHANGE



FILTER % YEAR ON YEAR CHANGE BY MONTH

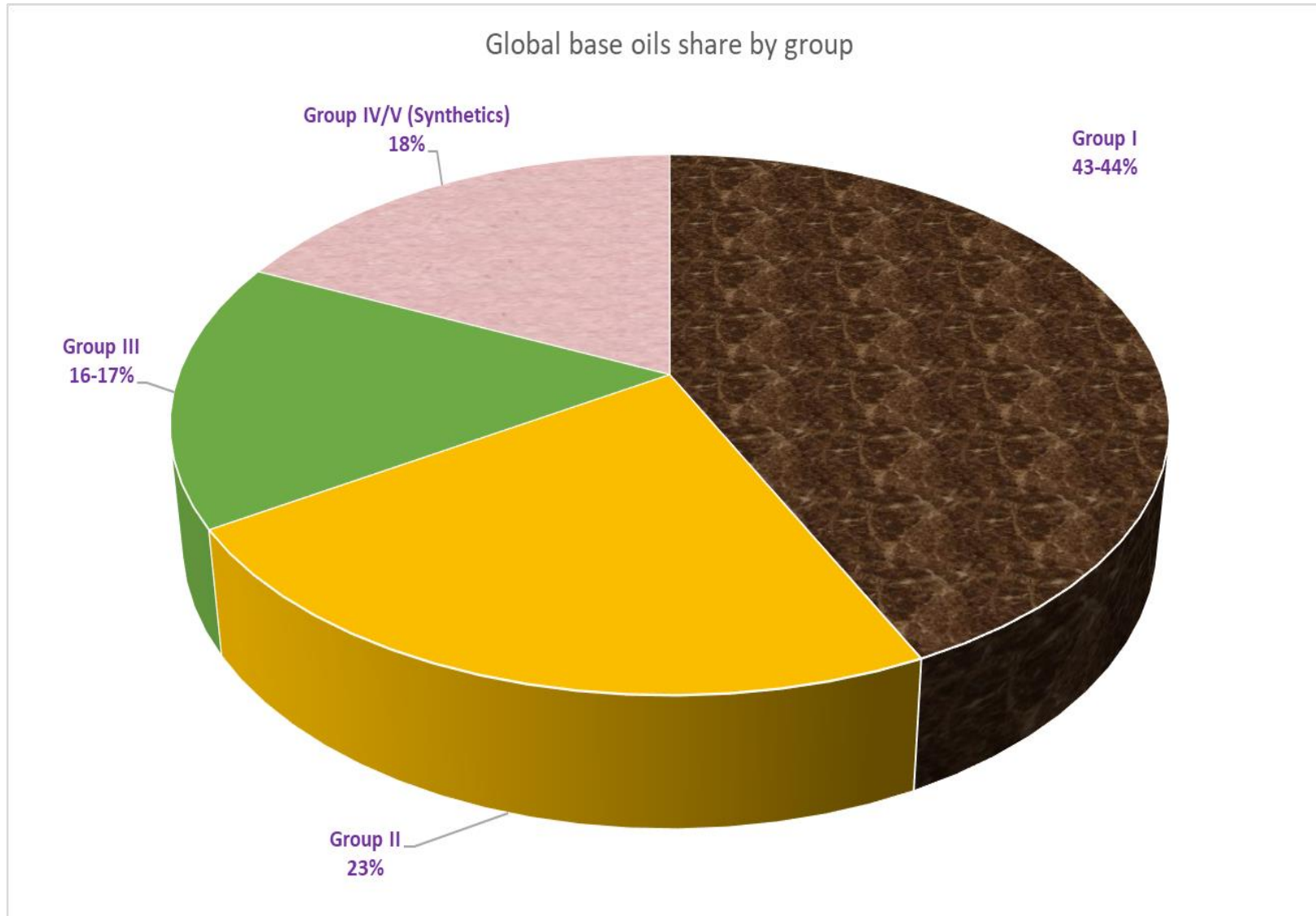
India's base oils imports have not shown steady increases



Group I & II base oils' changing dynamics

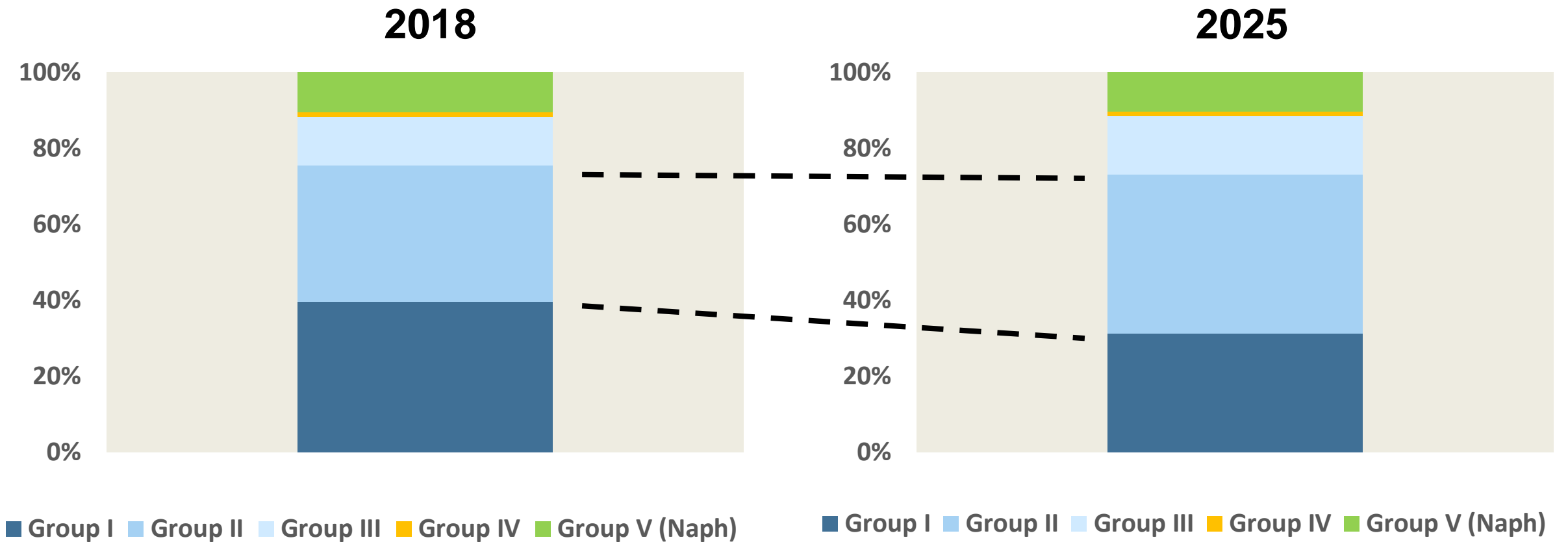


Global base oil share by group



Group I base oils still accounts for largest share of global base oils demand

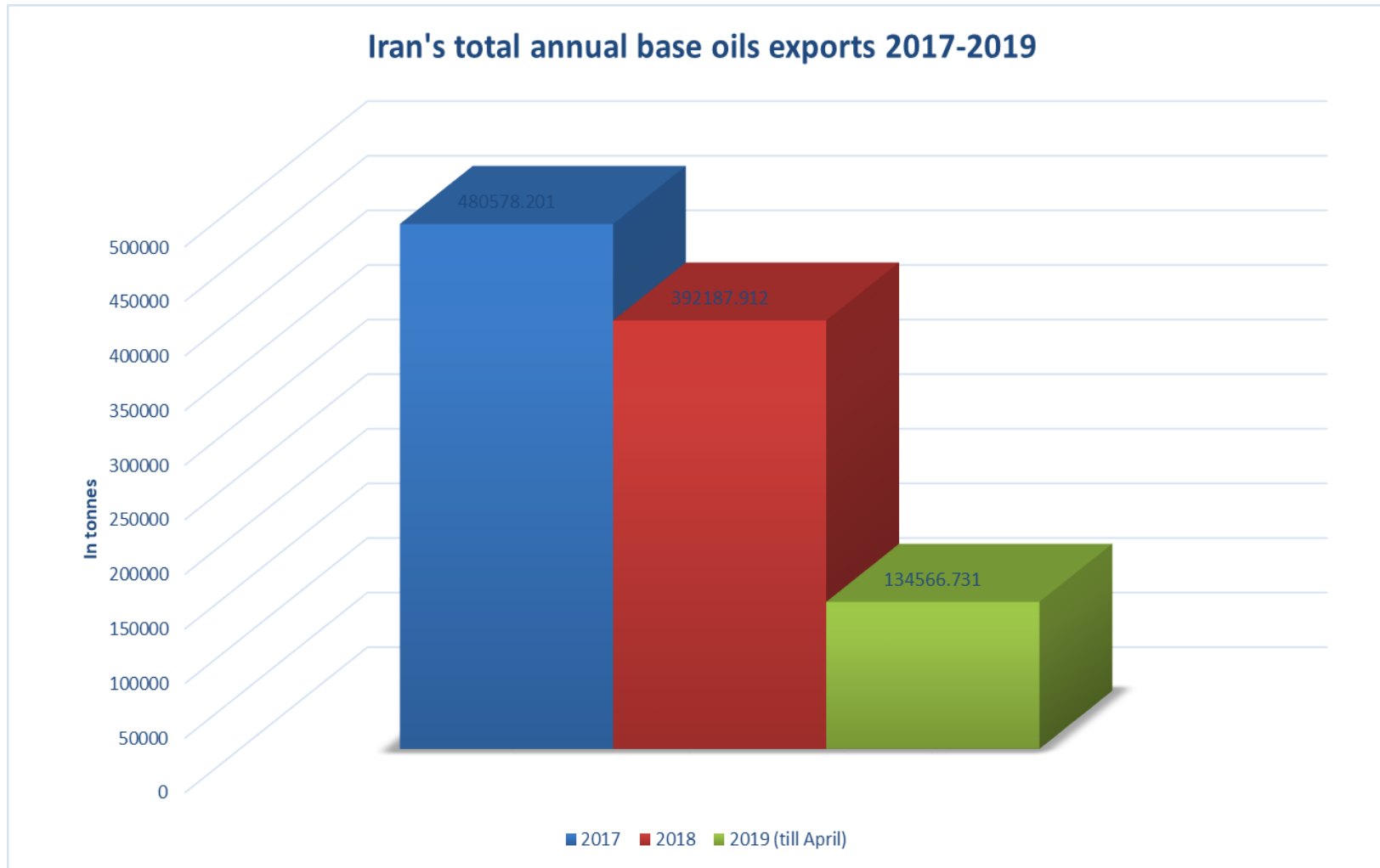
Group I share shrinks, Group II increases: 2018 vs 2025



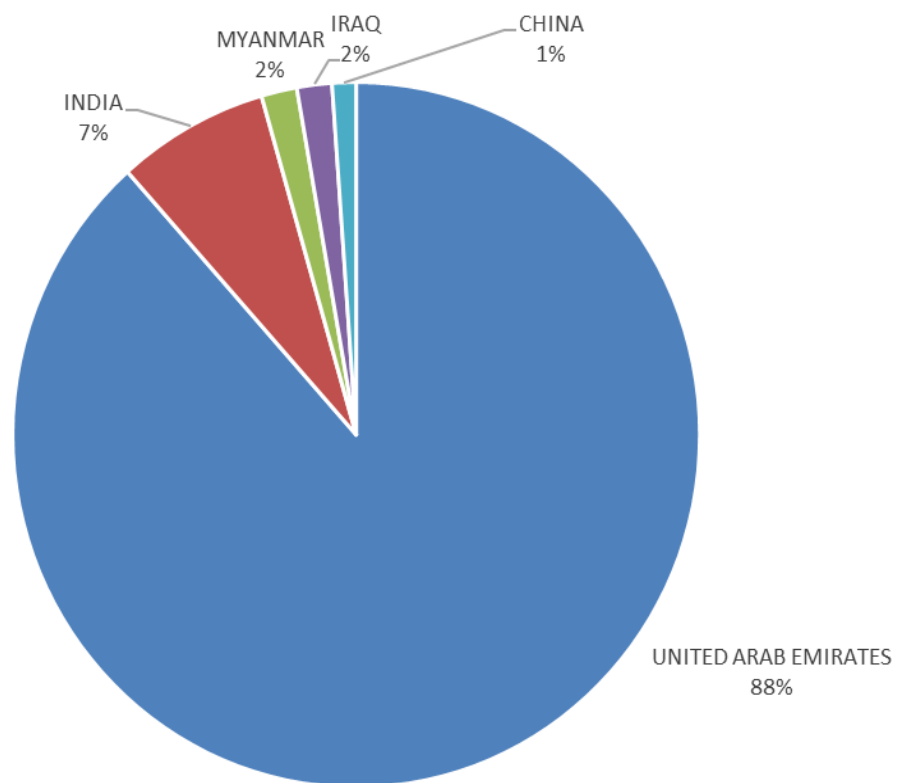
Group II becomes a major grade on a global basis but different regional profiles will persist

Sources: ICIS Supply & Demand Database, ICIS Analytics

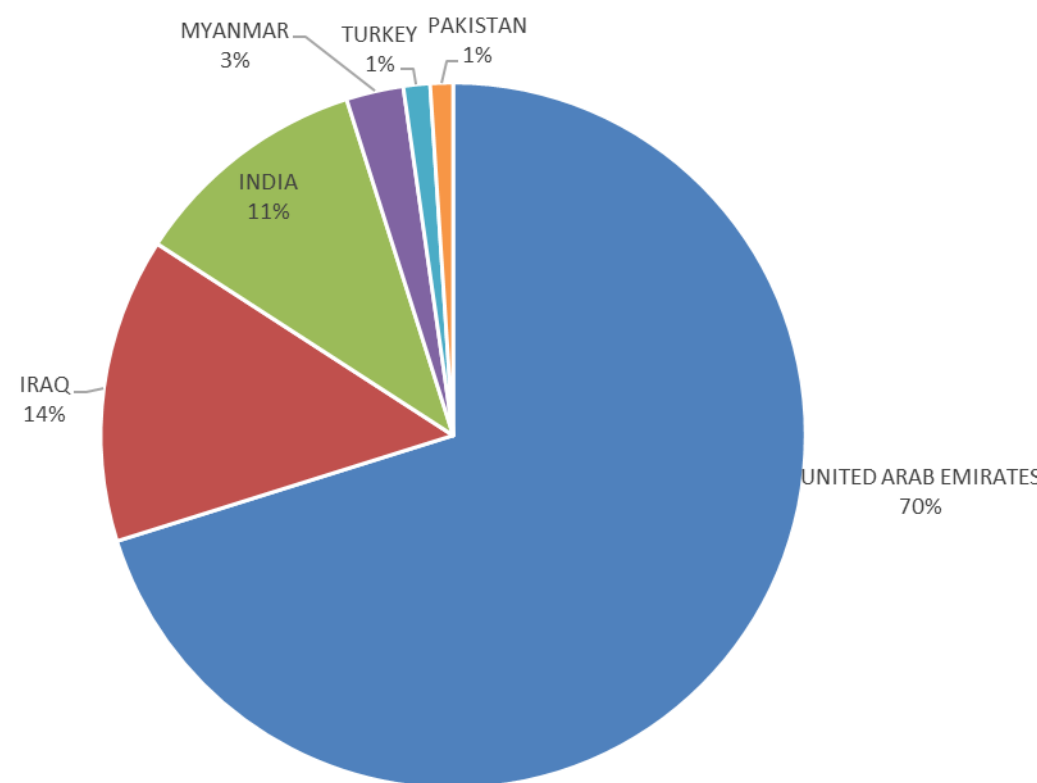
US sanctions on Iran have had some impact



Iran's base oils exports 2017-2018

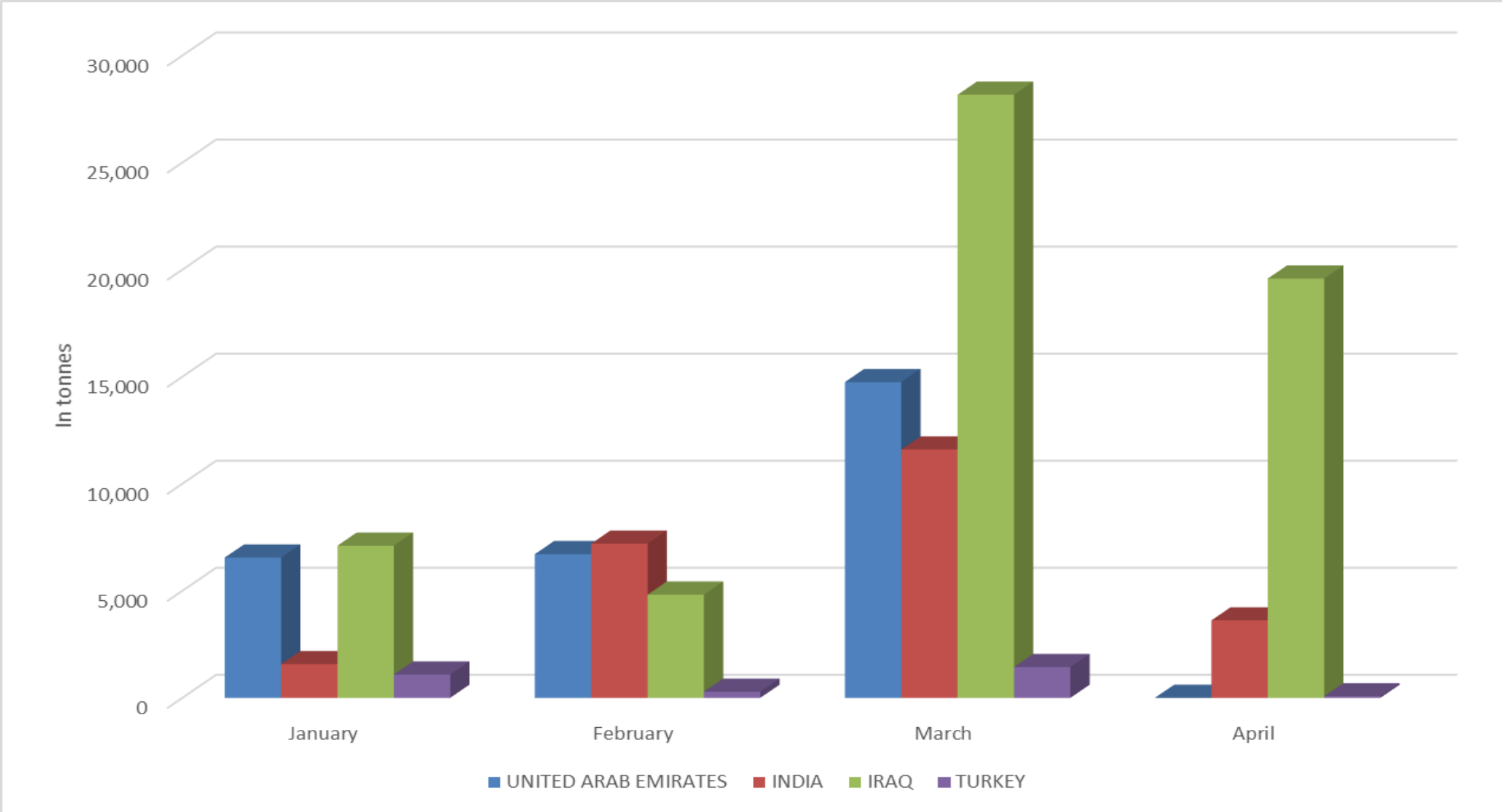


2017

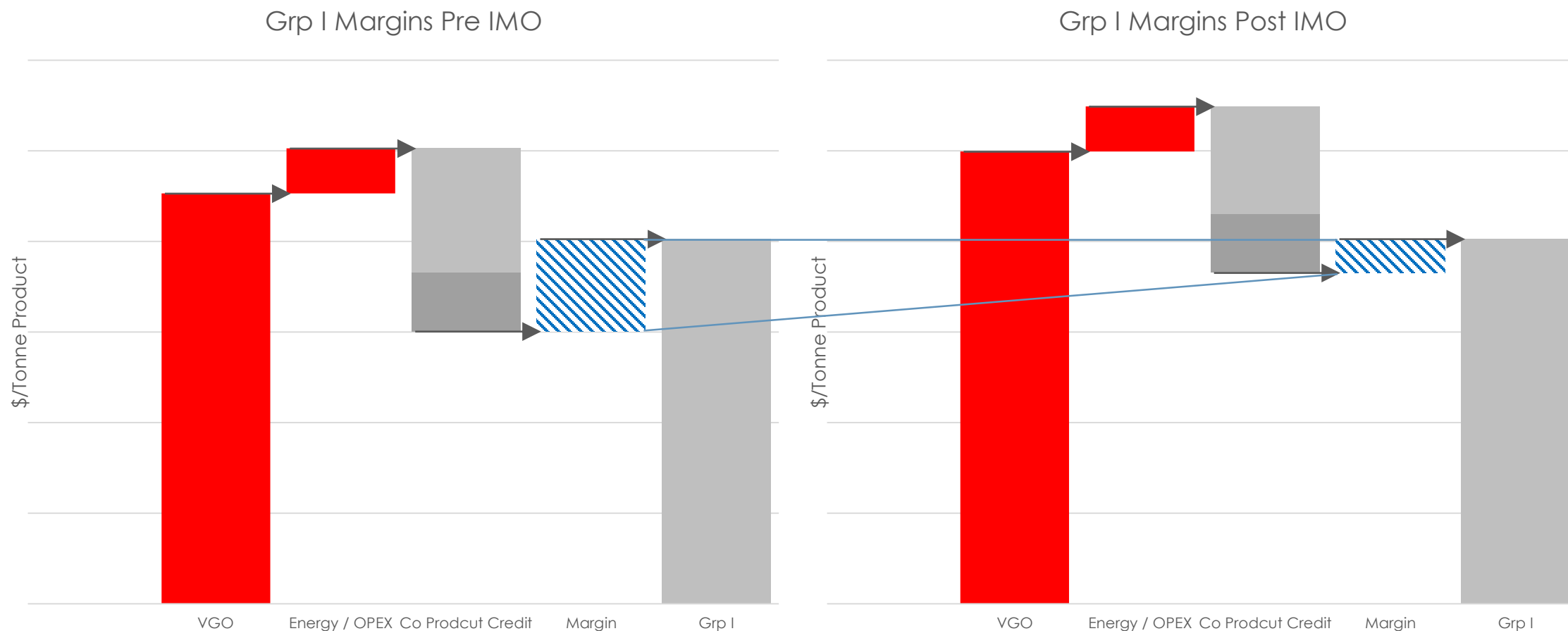


2018

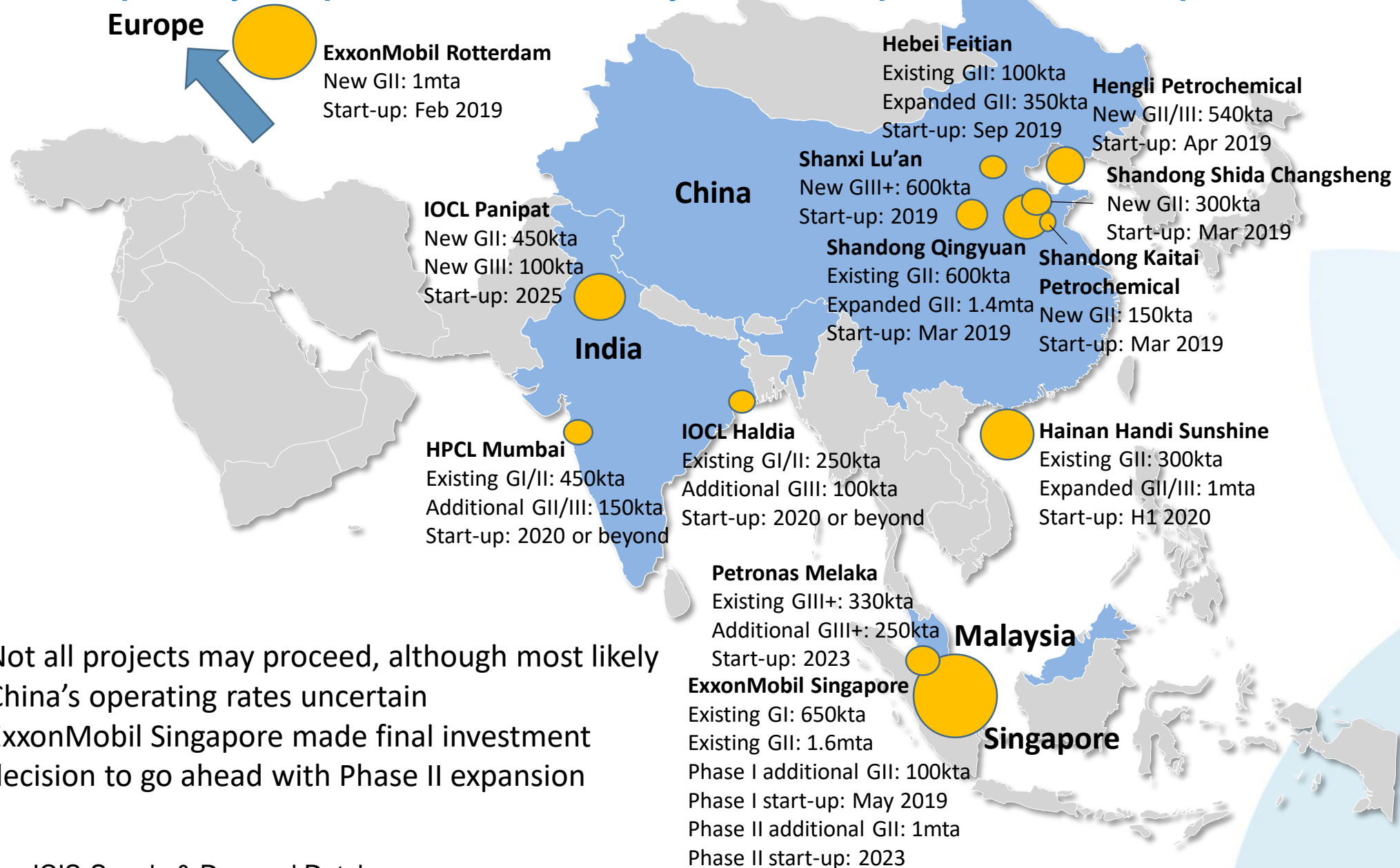
Iran's base oils exports Jan-Apr 2019



Group I base oils margins will be reduced post IMO 2020



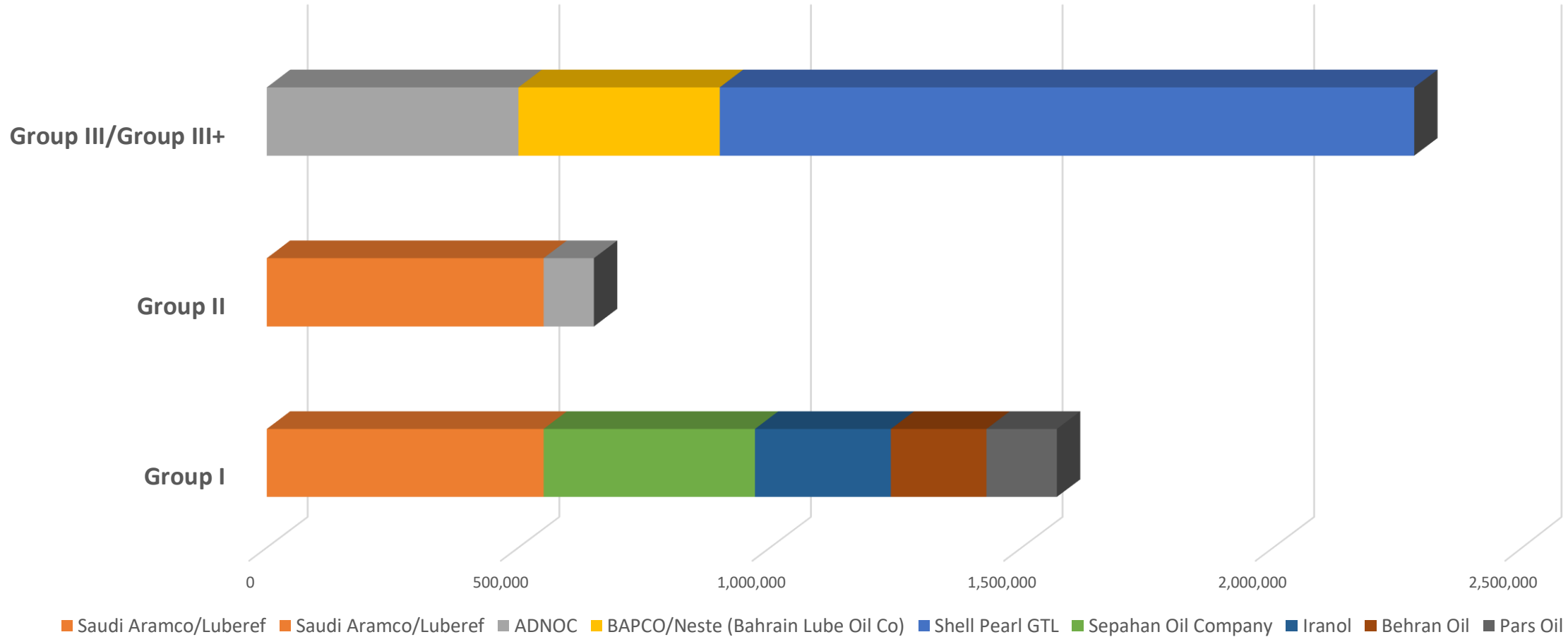
Asia capacity expansions mainly in Group II and Group III



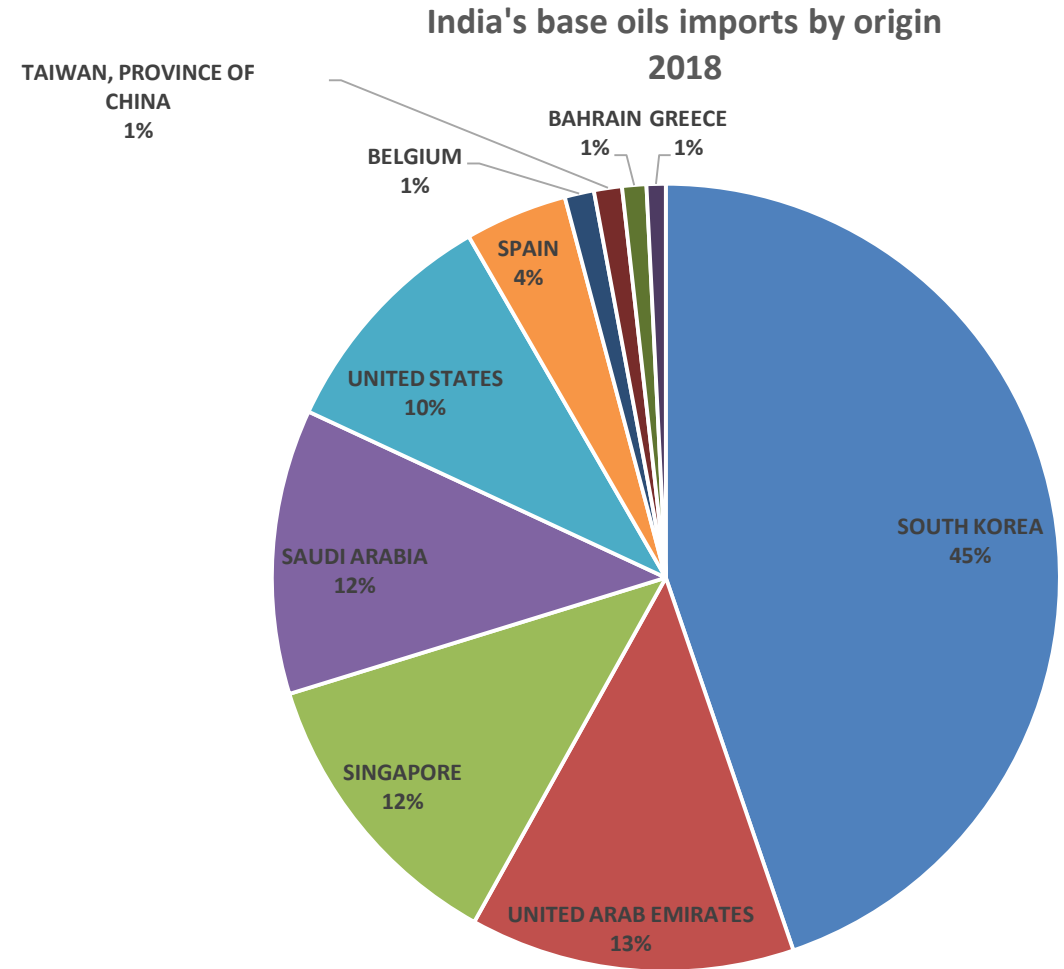
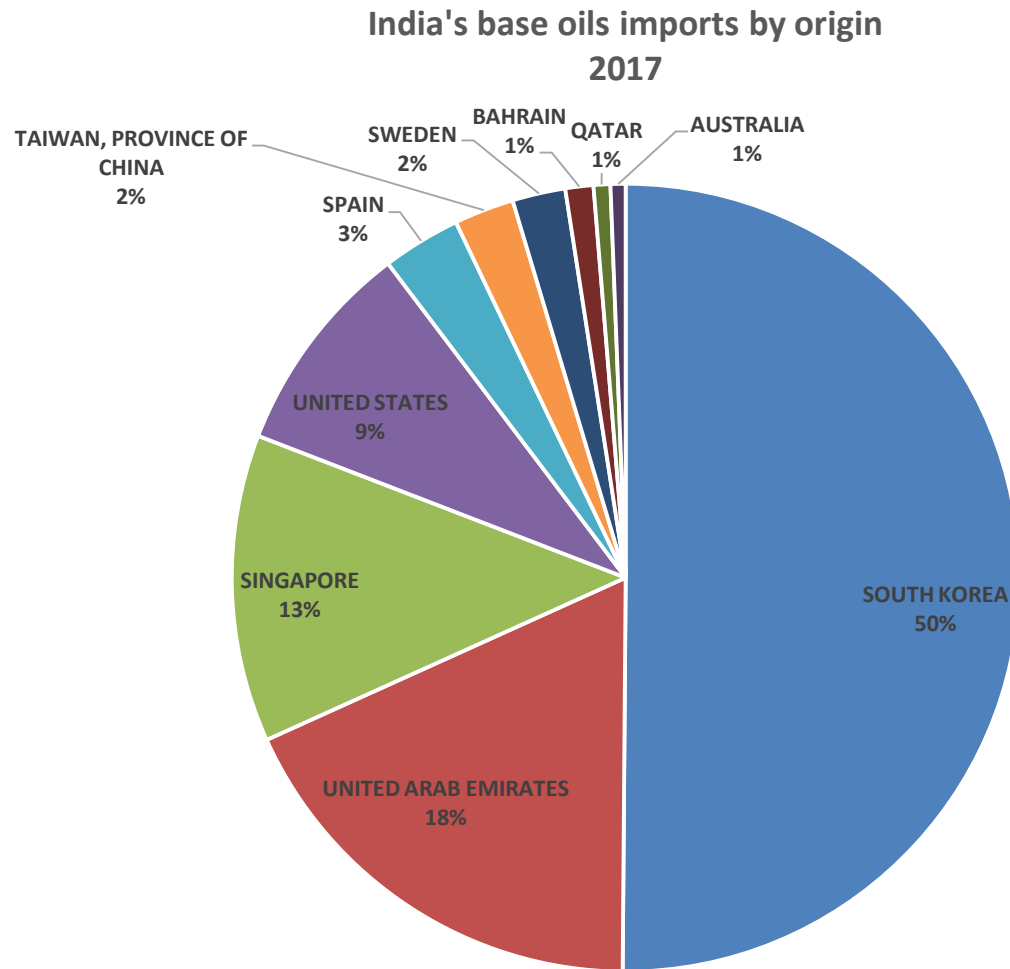
- Not all projects may proceed, although most likely
- China's operating rates uncertain
- ExxonMobil Singapore made final investment decision to go ahead with Phase II expansion

Middle East has become major player in Group III/III+

Middle East base oils production capacities

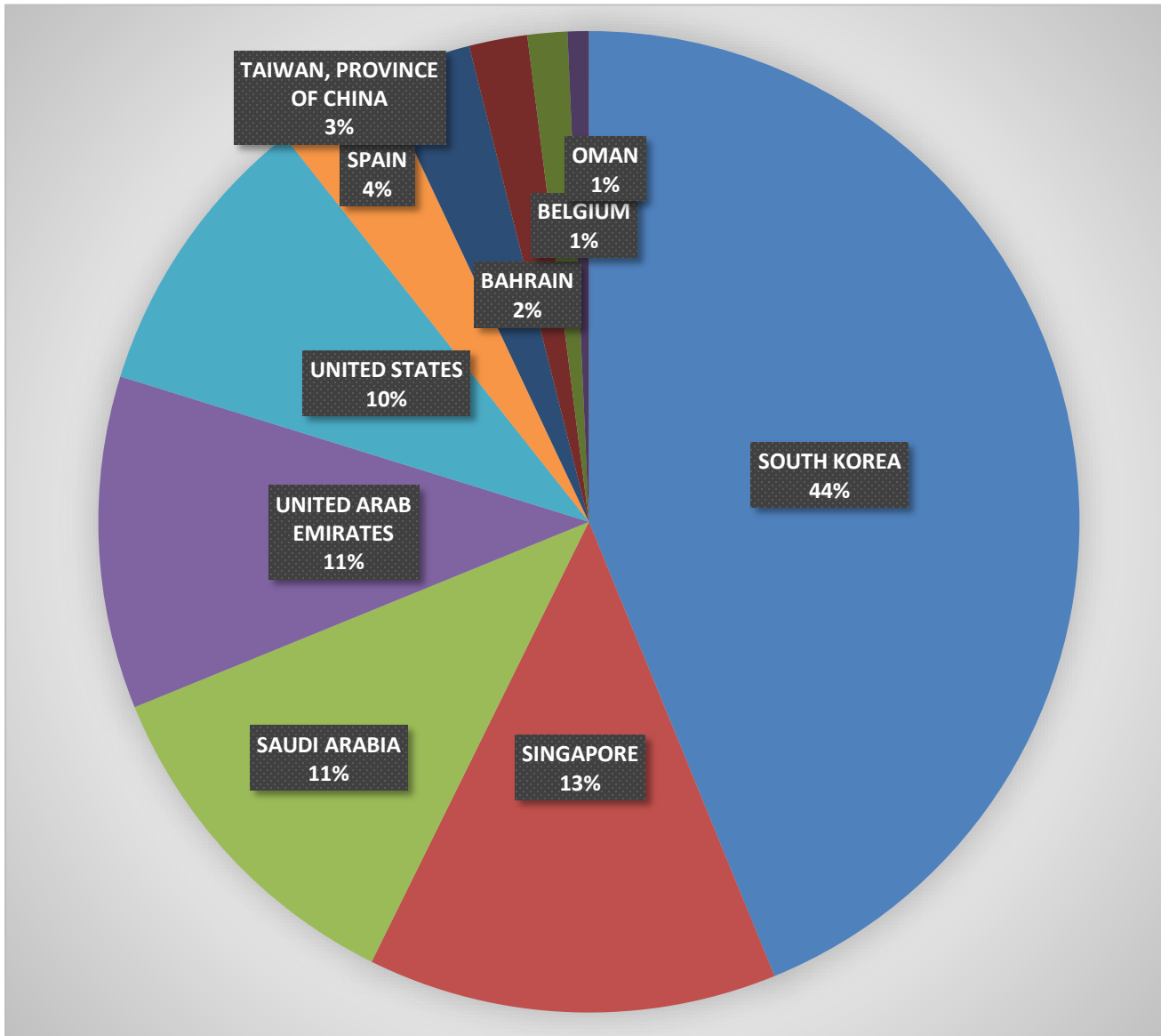


Changing dynamics in India's base oils imports



Source: ICIS Supply & Demand Database

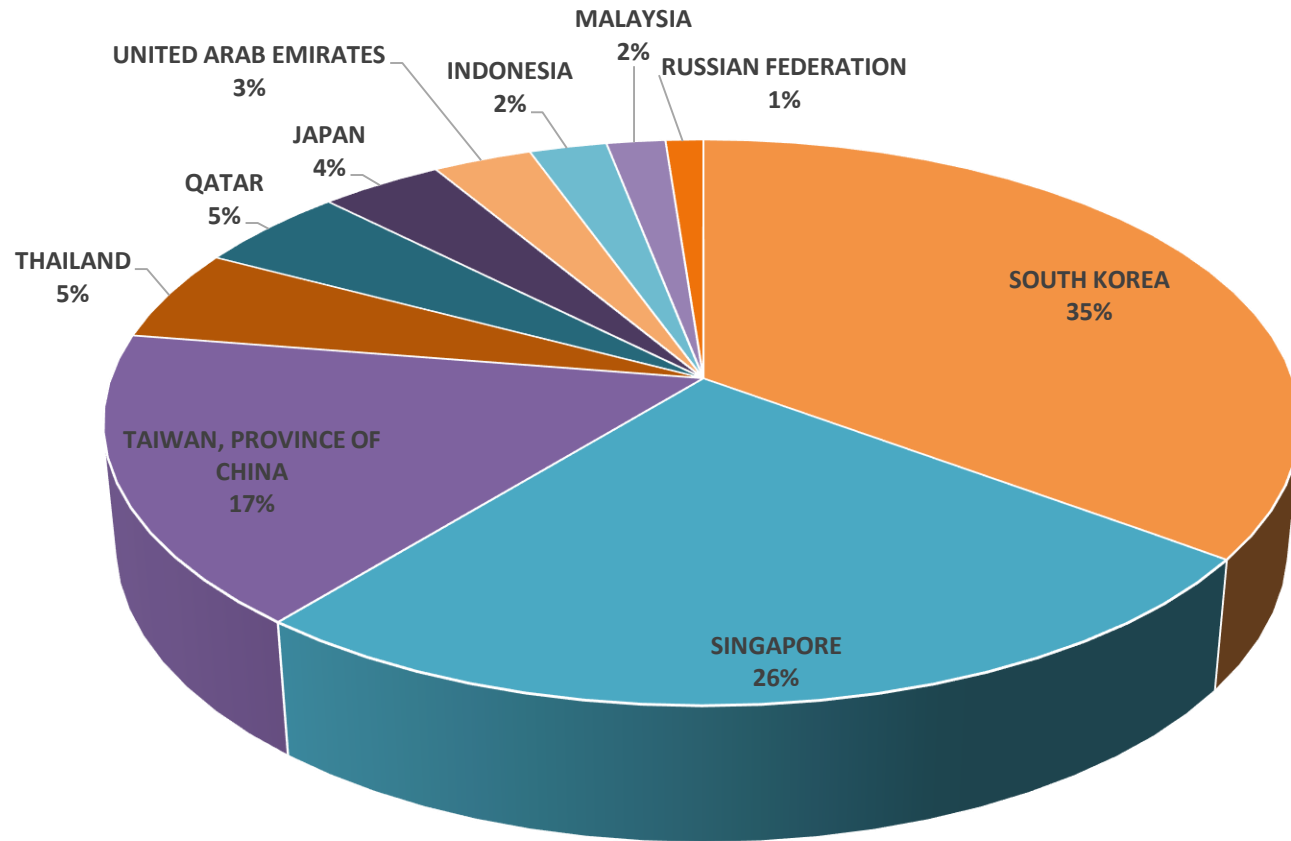
India's base oils imports by origin Jan-Aug 2019



Source: ICIS Supply & Demand Database

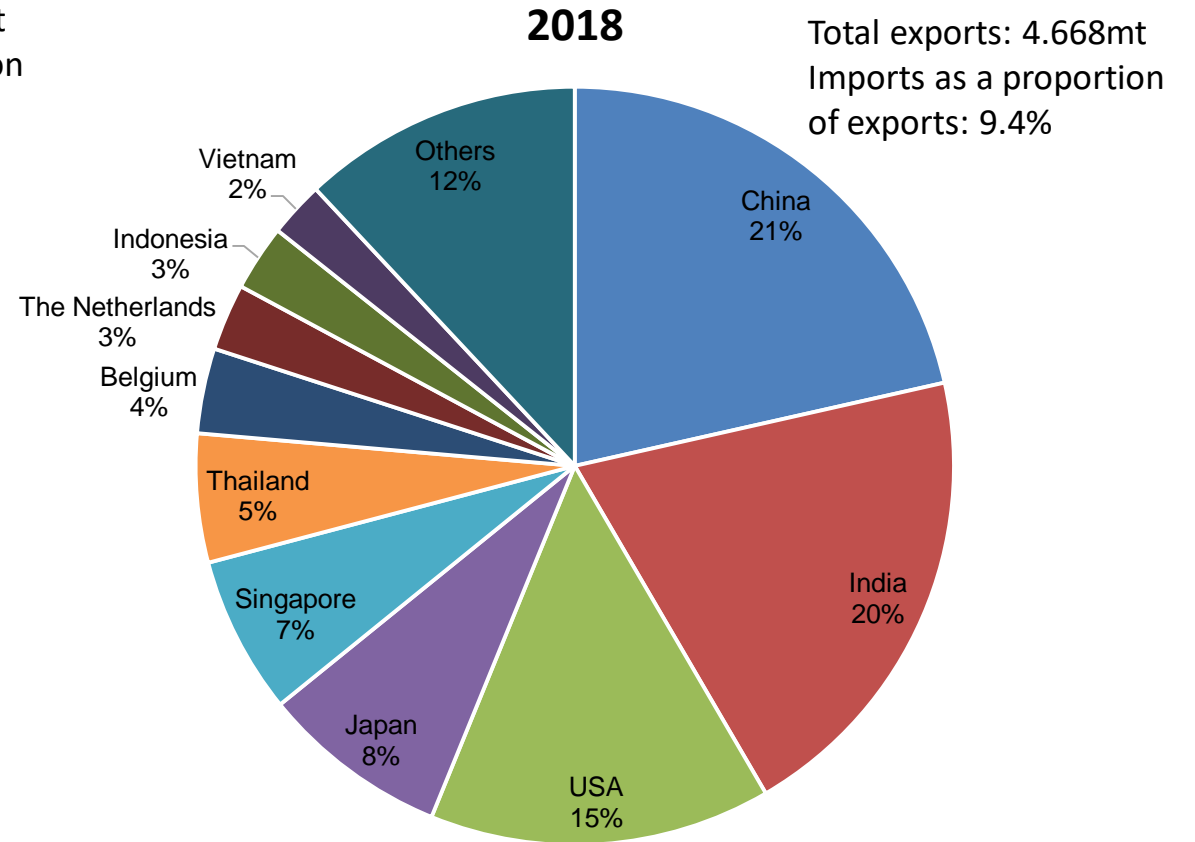
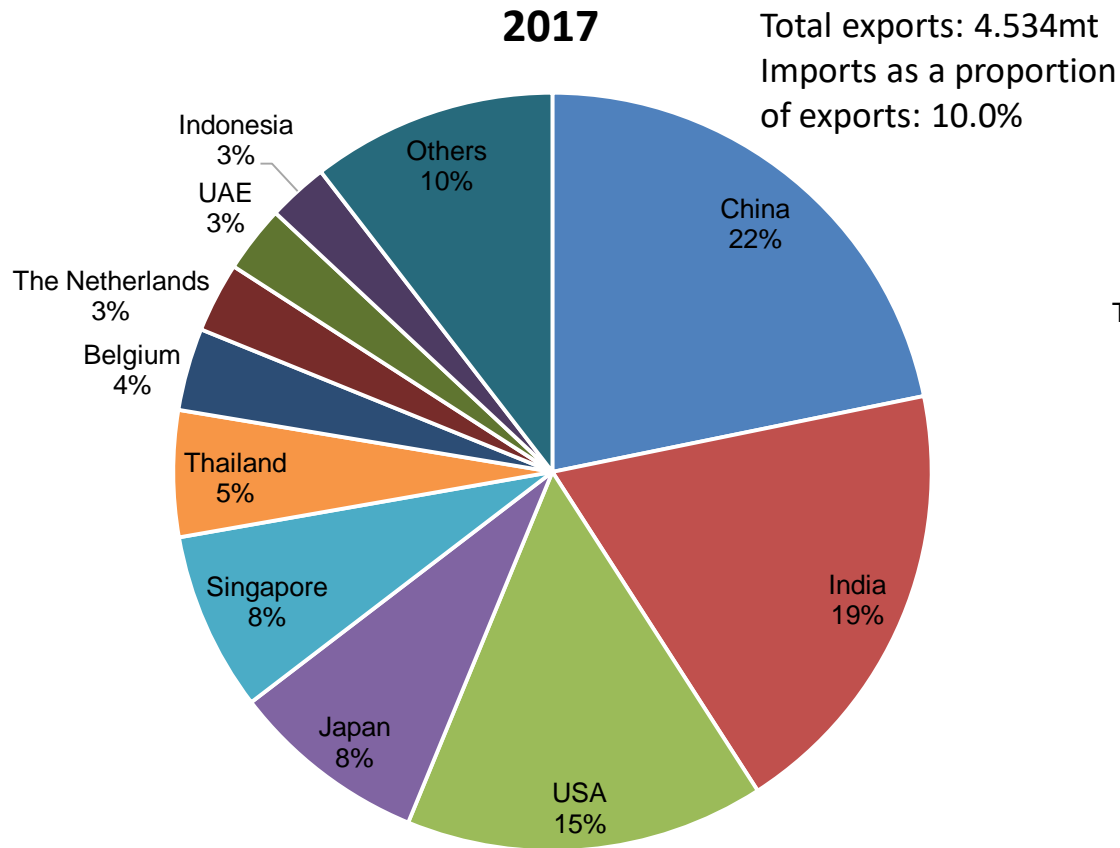
- India's 2019 data show trend continuing
- In Jan-Aug 2019, Middle East origin base oils accounted for 25% of top 10 importers into India
- Middle East import volume second only to South Korean material

China's base oils imports Jan-Aug 2019



- China's 2019 year to date import data again suggest continuing trend
- South Korea, Singapore main sources of base oils imports
- Middle East origin base oils accounted for 8% of top 10 base oils importers

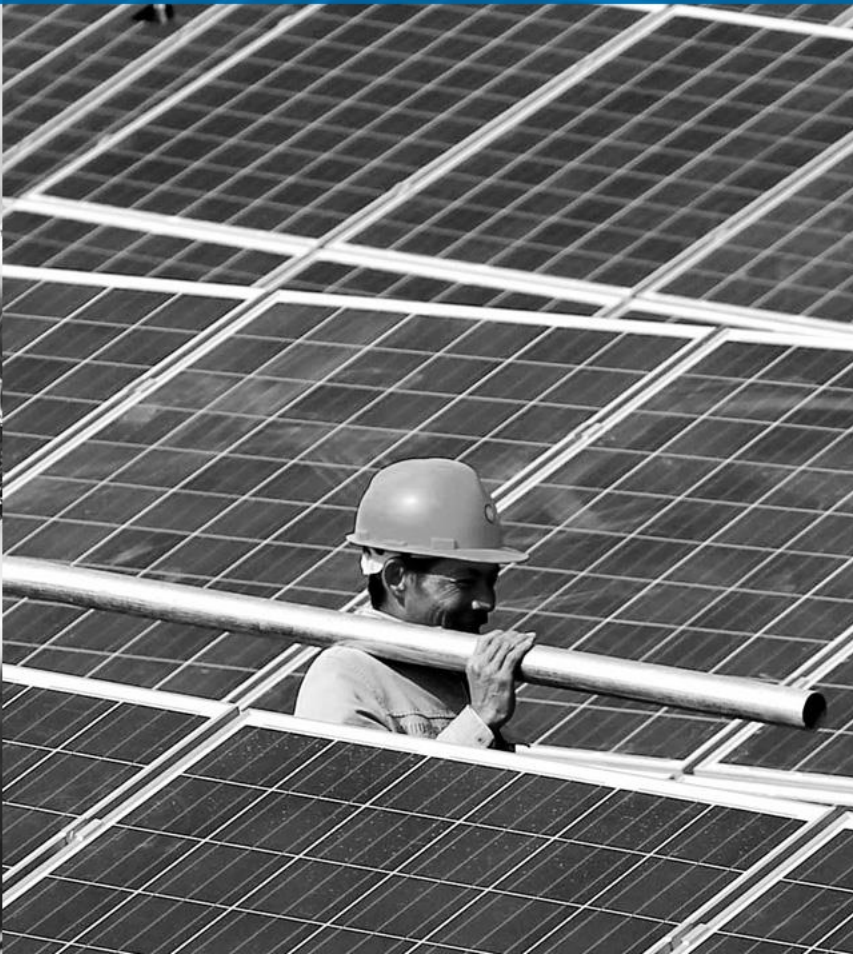
South Korea base oils exports by country



Source: ICIS Supply and Demand Database

- ▶ China remains South Korea's top export nation but India is catching up
- ▶ Group II/III exports to UAE fell on new Middle Eastern capacities

What lies ahead



Future implications for industrial lubricants

- ▶ Industrial lubricant makers may need to review base oils origins
- ▶ Group I segment to slowly shrink but not disappear
 - ▶ Group II to replace
 - ▶ Eyes on China, India
- ▶ Middle East share of global Group II/III markets to rise
 - ▶ Asian producers' market share to decrease



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Thank you for your time

Q&A

