



Strategic Shifts in the Global Oil Equation

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Overview



Short Term: Price Pressures, Sanctions on Iranian Oil, and OPEC Spare Capacity

Long Term: Market Tightness to Return and OPEC Holds the Cards for Additional Supply

A Real Game Changer: Liquids Production from Shale Gas Projects

***Refining Sector: Near-Term Outlook OK, but 2015-17 will be Difficult.
Will Enough Capacity be Closed?***

East of Suez Products Trade: More Gasoline and Diesel Must Leave the Region

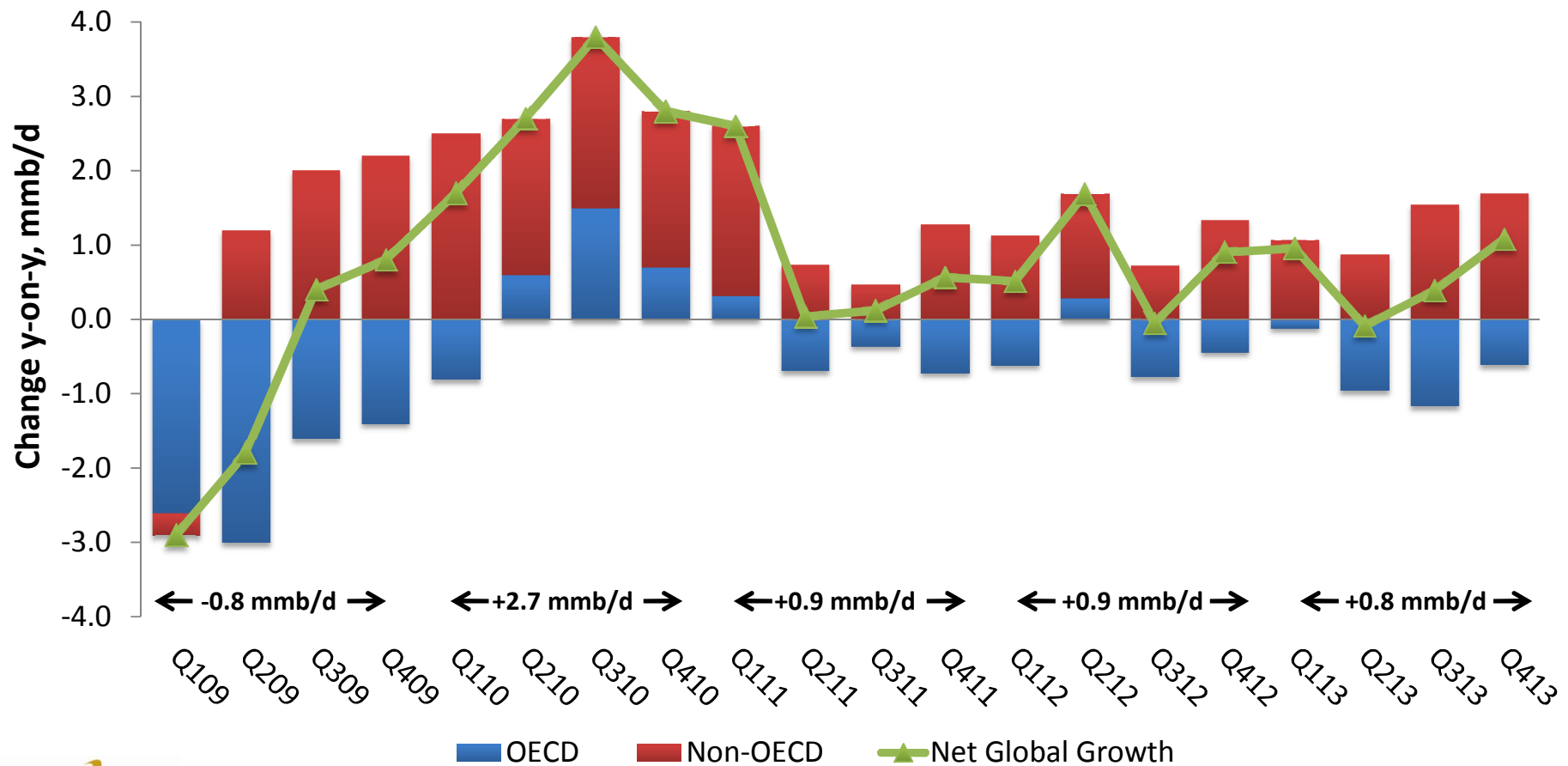
Gasoline: A Fuel of the Past?

Bunker Sector: Specification Changes to Impact Bunker Demand

Short-Term Oil Market: Price Pressures, Sanctions on Iranian Oil, and OPEC Spare Capacity

Oil Demand in 2011 and 2012 - Slowdown from 2010

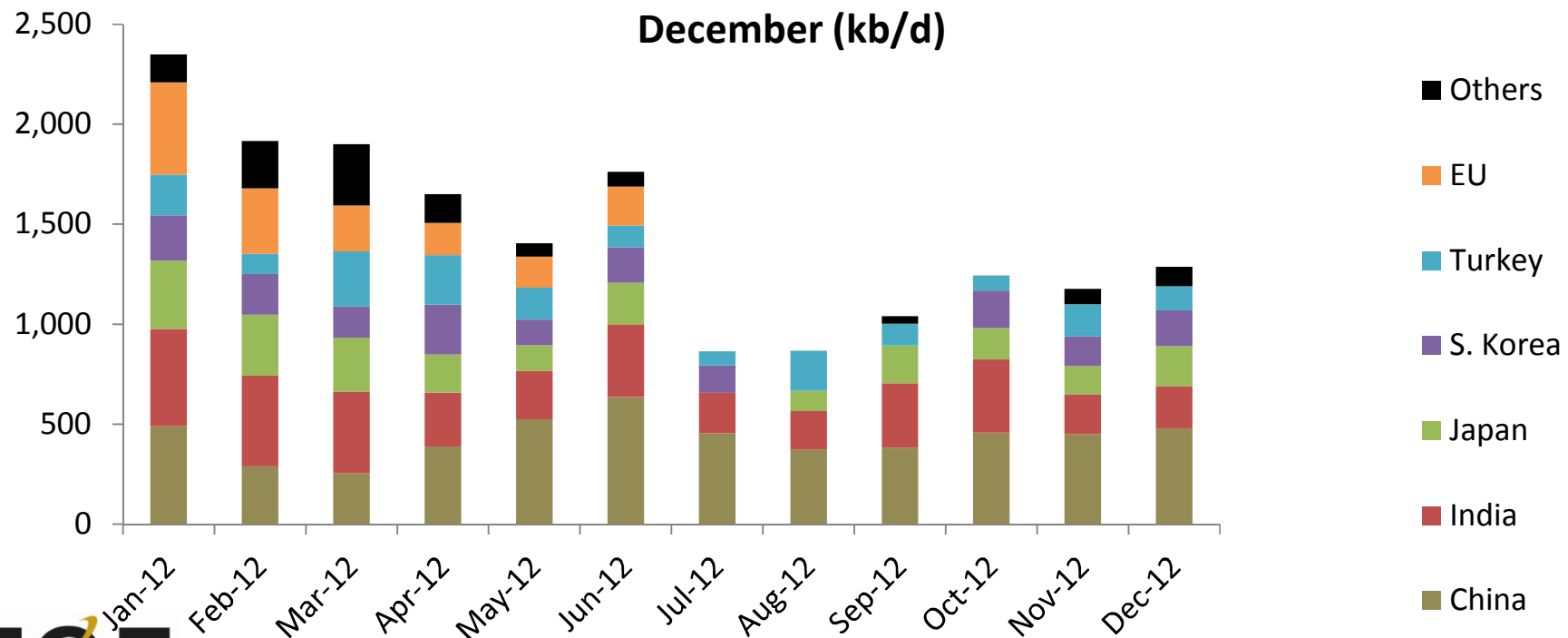
- OECD demand boosted in Q2 2012 by high Japan oil input for power generation, due to shortfall in nuclear
- Y-o-y decrease in OECD demand in Q3 2012 should slow down temporarily in Q4 2012 and Q1 2013 (mild winter last year)
- Non-OECD demand growth projected to pick up in second half of 2013, mainly due to acceleration in China



Iran Oil Exports – Recovering Slightly Now

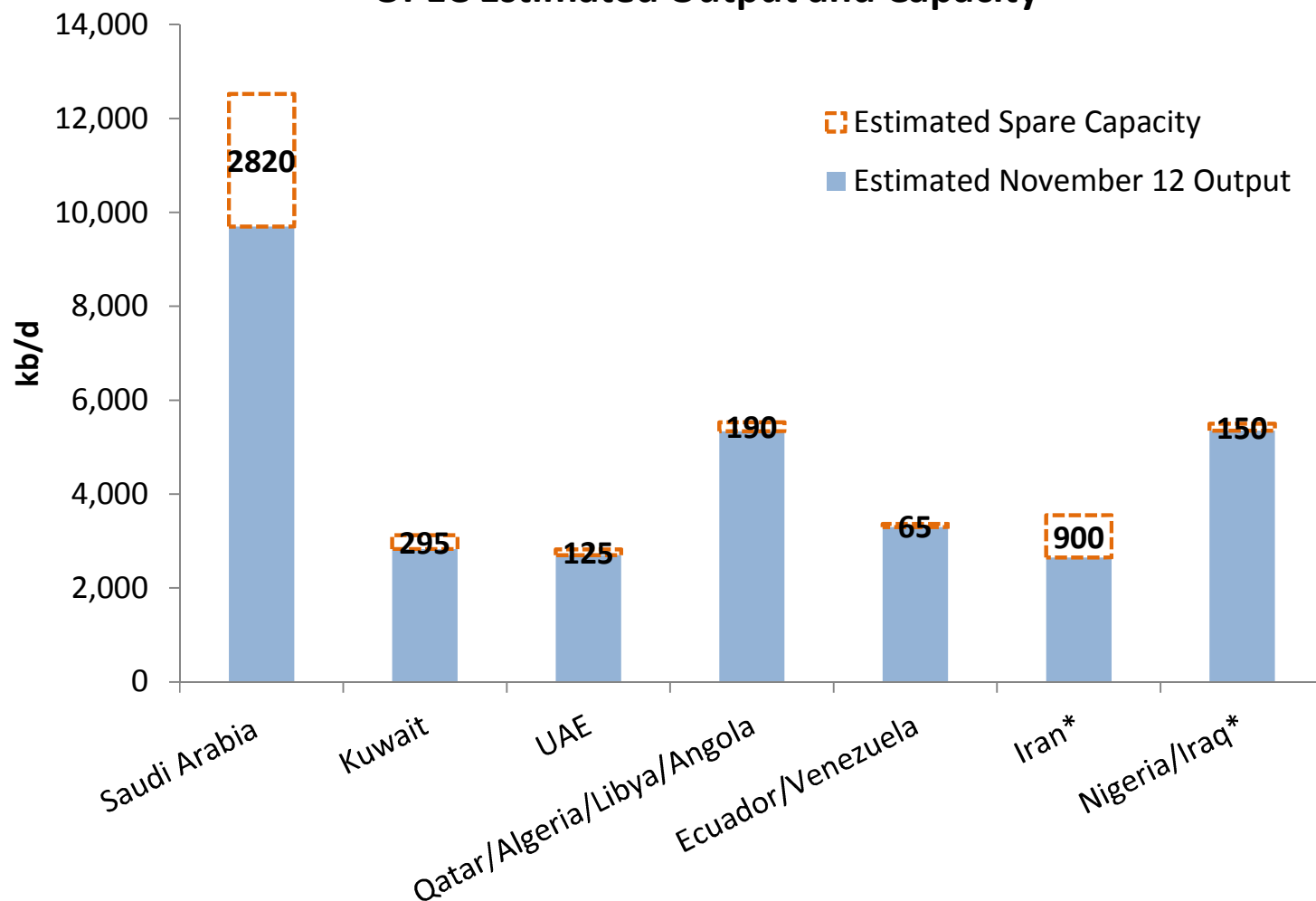
- Iran’s estimated oil exports down to only 900 kb/d in July/August 2012 due to sanctions versus 2.2 mmb/d average in 2011.
- However, exports are expected to recover to around 1-1.3 mmb/d towards end 2012.
- Since the introduction of gas sanctions in October 2012, Iranian LPG exports have also been affected—only one shipment in November, compared to seven in September and five in October.

Crude Oil Imports From Iran – Current Outlook Through December (kb/d)



OPEC Spare Capacity Estimated at 4.5 mmb/d

OPEC Estimated Output and Capacity

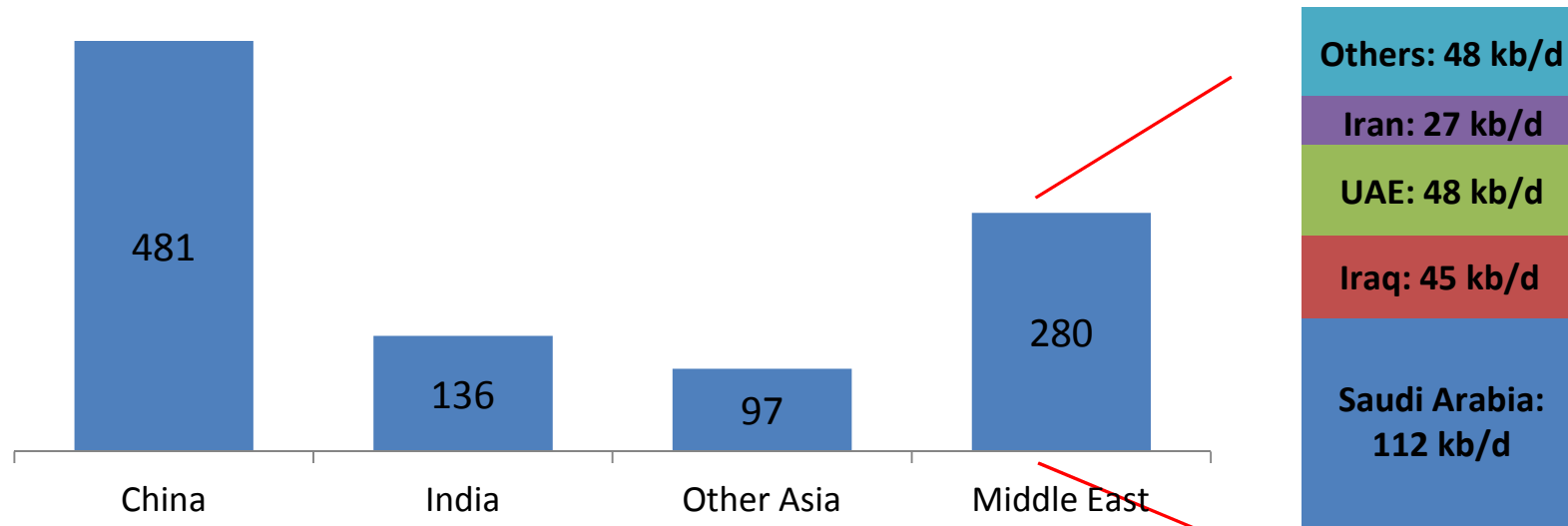


*Note: Nigeria/Iraq output currently constrained by temporarily unavailable capacity; Iran's capacity at end-2012 potentially lower than projected due to impact of sanctions.

***Long Term: Market Tightness to
Return and OPEC Holds the Cards for
Additional Supply***

Long Term: Market Tightness Will Return

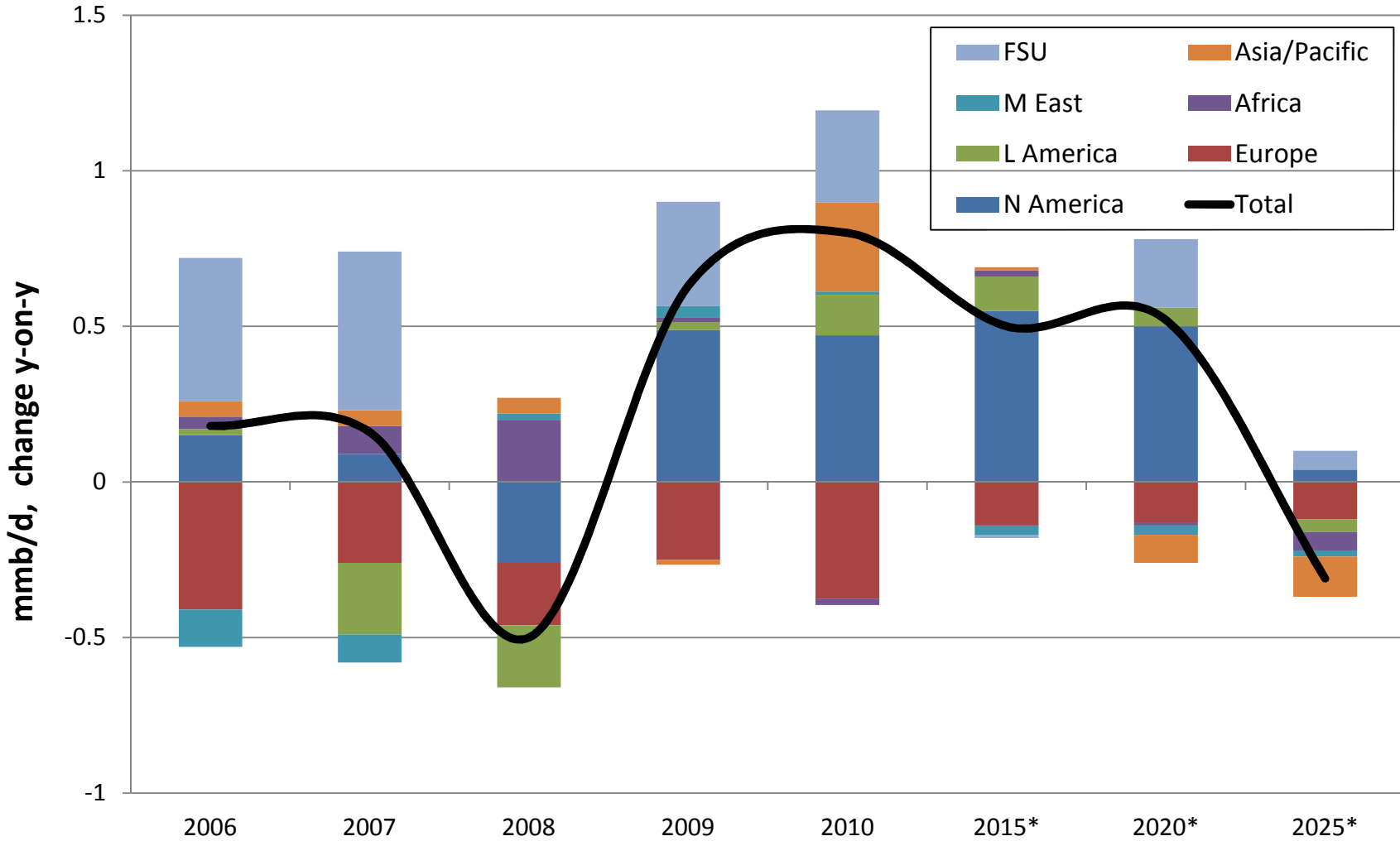
Annual “Base-Load” Demand Growth: 2010-2020, kb/d



Structural Demand Shift:

- OECD countries: Oil demand has peaked;
- Non-OECD countries: Strong annual “base-load” demand growth of around **1.0 mmb/d** in 2010-2020.

Non-OPEC Production Plateau



* Annual average of 5 years change



But what will be the impact of shale gas related oil?

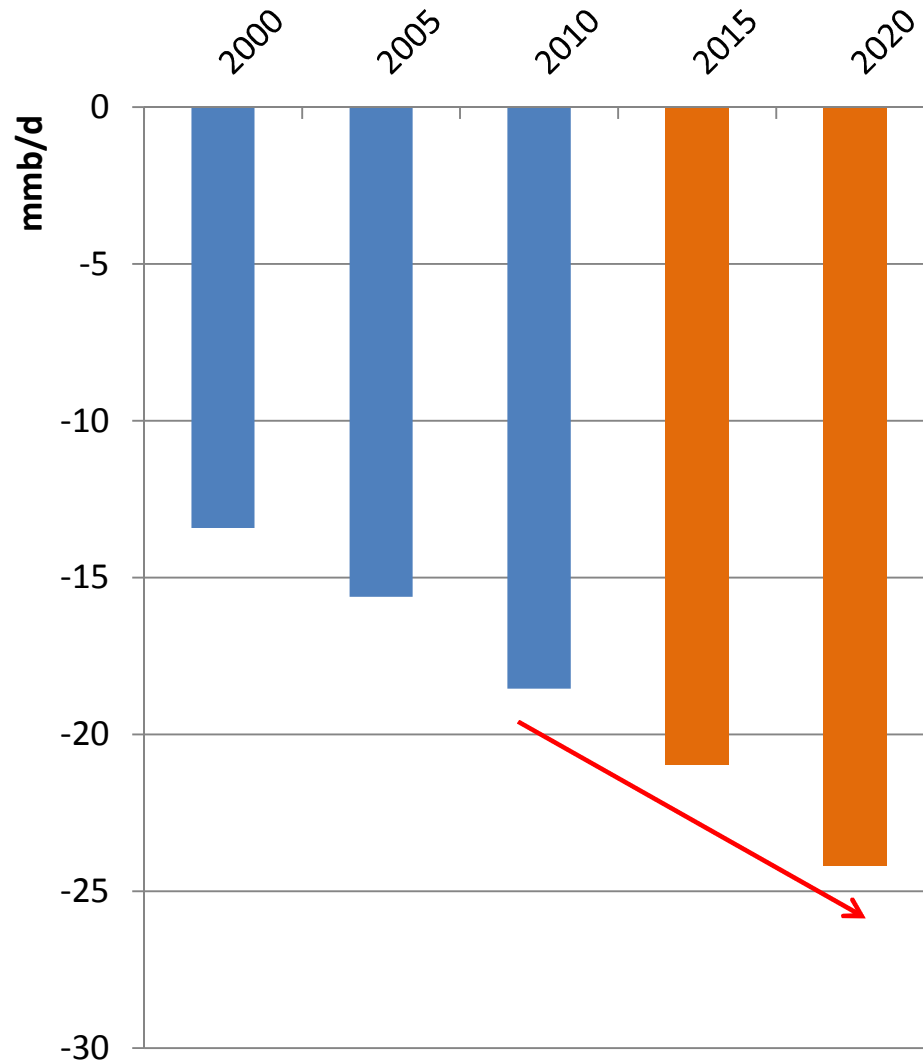
Expansion in Iraqi Export Infrastructure

System	Current Capacity (mmb/d)	Planned Capacity (mmb/d)
Iraqi-Turkish System (North)	0.7	+ 0.9
Basra Port (South)	1.6	-
Al Amaya Port (South)	0.5	-
New Southern Export Project	-	+ 3.2
Total	2.8	+ 4.1

**= 6.9 mmb/d
by 2013-14**

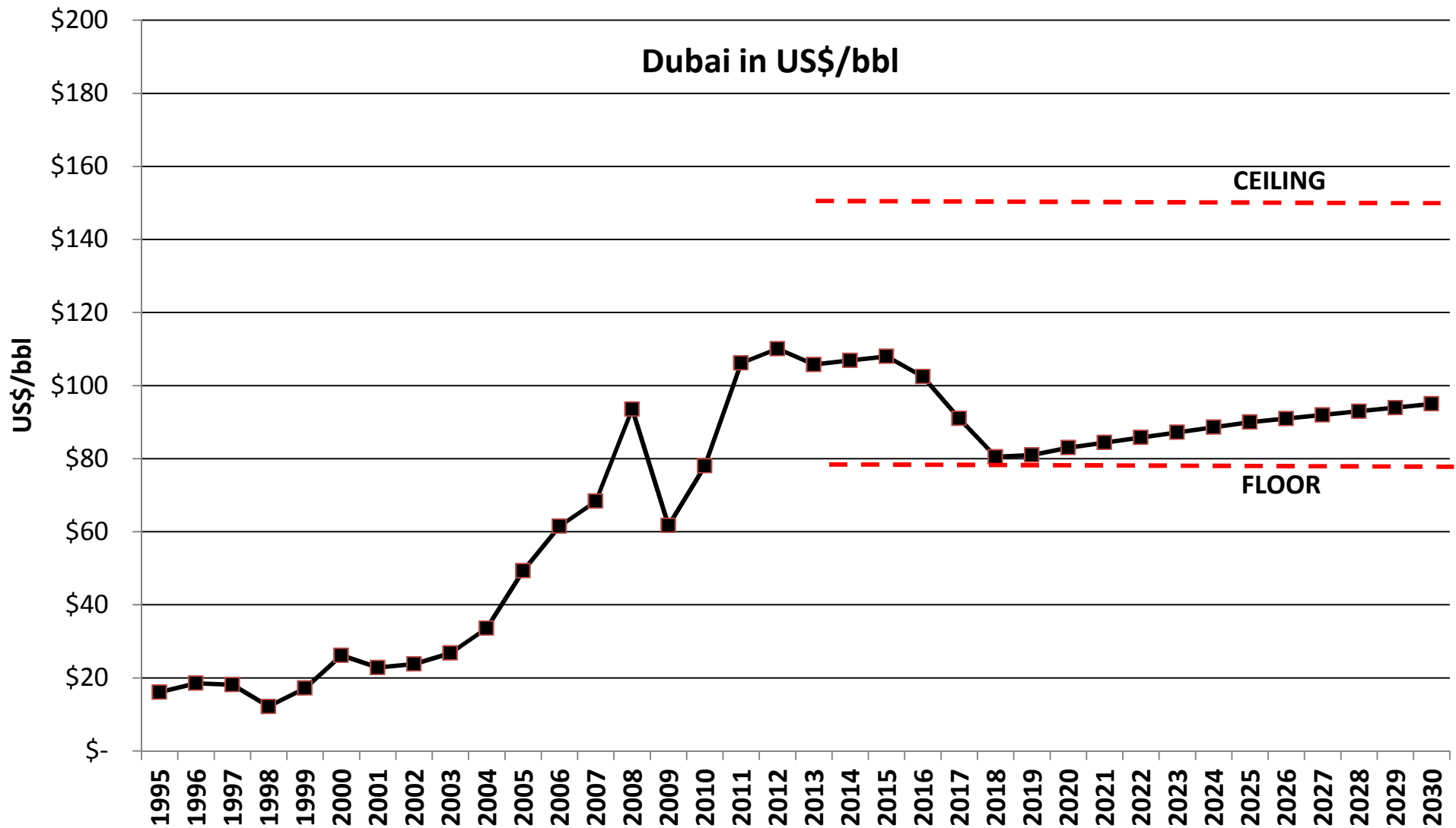
- New Southern Export Project (3 undersea pipelines and 5 SPM facilities) plans to add a total of 3.2 mmb/d of export capacity by 2014.
- The first new SPM offshore Basra started up in March 2012, shortly followed by the second SPM in April, each with an eventual capacity of 900 kb/d.
- The third and fourth SPMs are scheduled for completion by 2020; with another spare SPM scheduled for completion by 2025.
- This has already allowed Iraq to boost exports from its Southern fields.
- Total crude exports reached a new monthly high of more than 2.6 mmb/d in October 2012.

Asia Net Crude Imports Rising Fast



- **Diversifying sources of crude supplies**, but Asia has to **import more from OPEC** (especially Middle Eastern countries).
- **Asian NOCs aggressively acquiring overseas upstream assets.**
 - China spent over US\$60 billion in overseas direct oil and gas assets acquisitions between 2008 and end 2011.
 - India, Korea, and Japan are also aggressive in their overseas acquisitions.
- **Establishing a global trading network.**

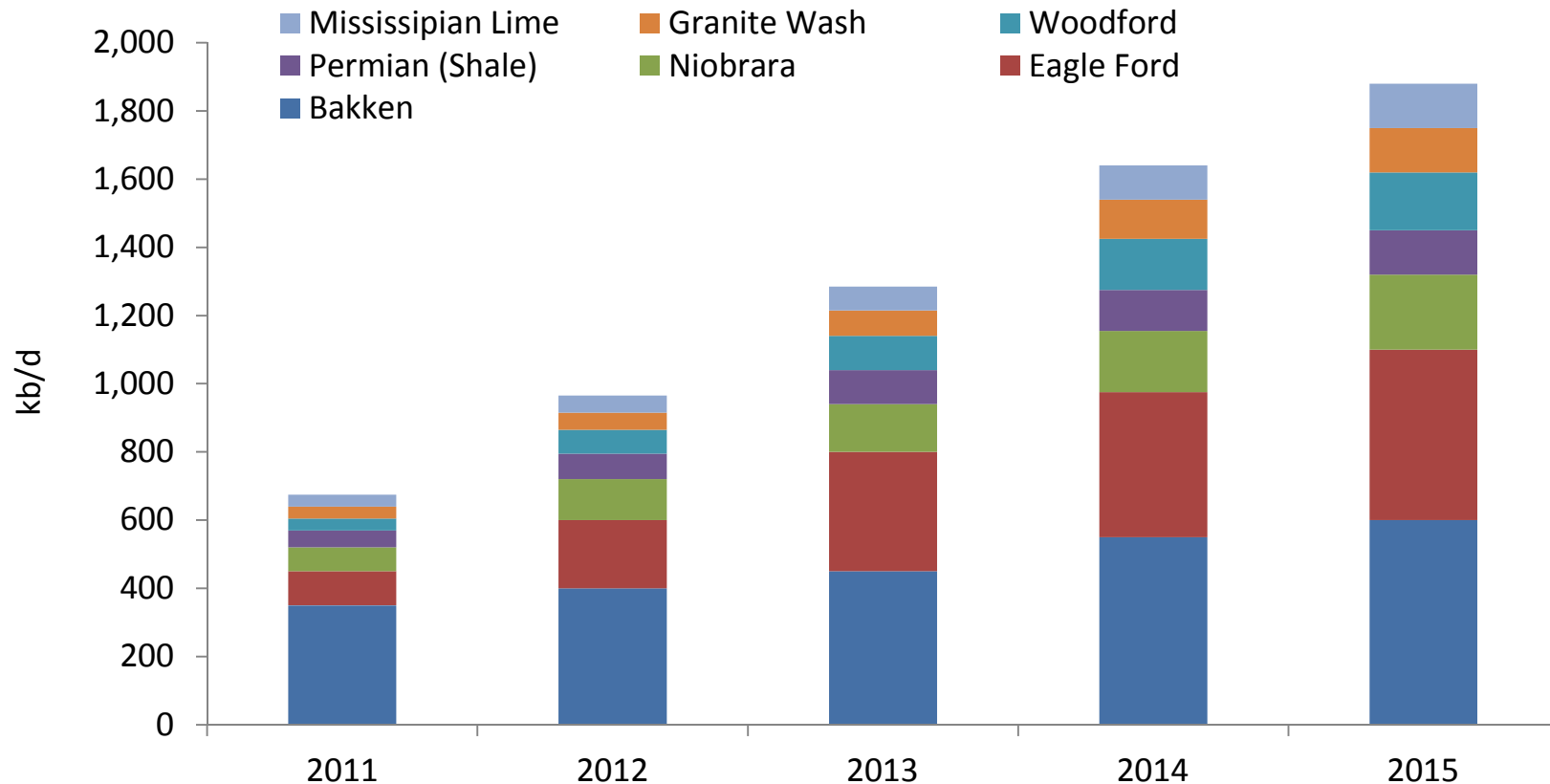
Long-Term Oil Price Outlook



2011 are actuals. Forecasts in \$2012

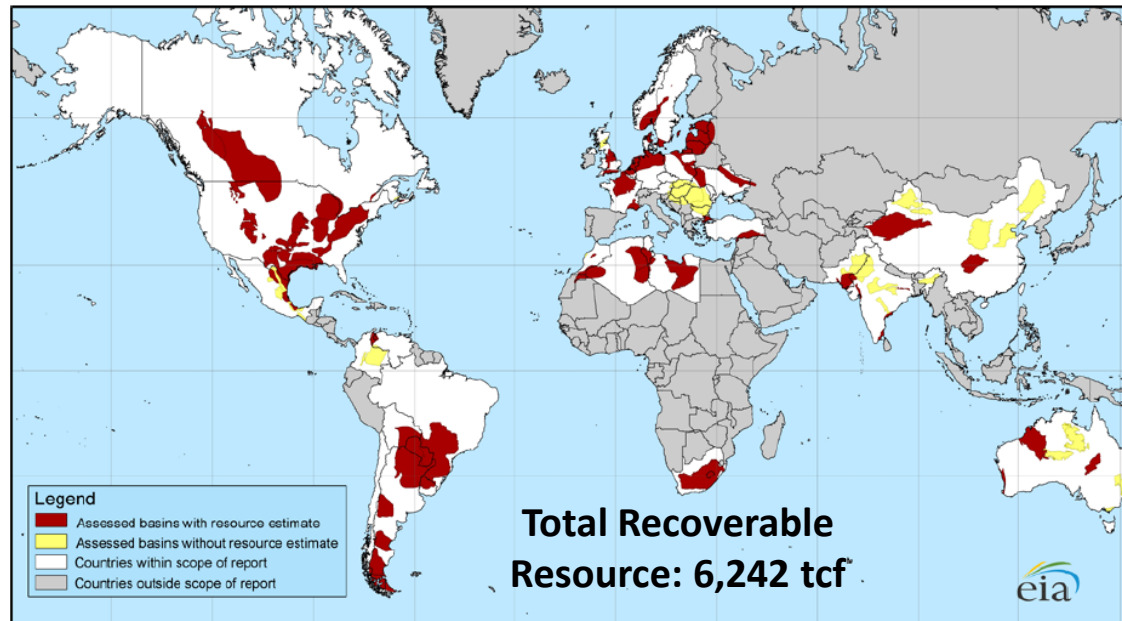
A Real Game Changer: Liquids Production from Shale Gas Projects

Real Game Changer: Liquids Production from Shale



- US crude production declined from about 6 mmb/d in 2003 to 5 mmb/d in early 2009, but light crude production associated with shale gas plays has reversed the trend.
- Current liquid production from shale is 700 kb/d with projections to nearly 2 mmb/d by 2015.

Non-Conventional Supply: Shale Gas Revolution Continues



Europe	Proven Natural Gas Reserves (tcf)	Technically Recoverable Shale Gas Resources (tcf)
France	0.2	180
Germany	6.2	8
Netherlands	49	17
Norway	72	83
UK	9	20
Denmark	2.1	23
Sweden		41
Poland	5.8	187
Turkey	0.2	15
Ukraine	39	42
Lithuania		4
Others*	2.71	19
Total		639

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Already banned!

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* Bulgaria, Hungary and Romania.

South America	Proven Natural Gas Reserves (tcf)	Technically Recoverable Shale Gas Resources (tcf)
Venezuela	178.9	11
Colombia	4	19
Argentina	13.4	774
Brazil	12.9	226
Chile	3.5	64
Uruguay		21
Paraguay		62
Bolivia	26.5	48
Total		1,225

2

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Africa	Proven Natural Gas Reserves (tcf)	Technically Recoverable Shale Gas Resources (tcf)
South Africa		485
Libya	54.7	290
Tunisia	2.3	18
Algeria	159	231
Morocco	0.1	11
Western Sahara		7
Mauritania	1	0
Total		1,042

4

8

9

Asia (incl. AU)	Proven Natural Gas Reserves (tcf)	Technically Recoverable Shale Gas Resources (tcf)
China	107	1,275
India	37.9	63
Pakistan	29.7	51
Australia	110	396**
Total		1,785

1

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North America	Proven Natural Gas Reserves (tcf)	Technically Recoverable Shale Gas Resources (tcf)
USA	272.5	482
Canada	62	388
Mexico	12	681
Total		1,551

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** Recently downgraded by Geoscience Australia

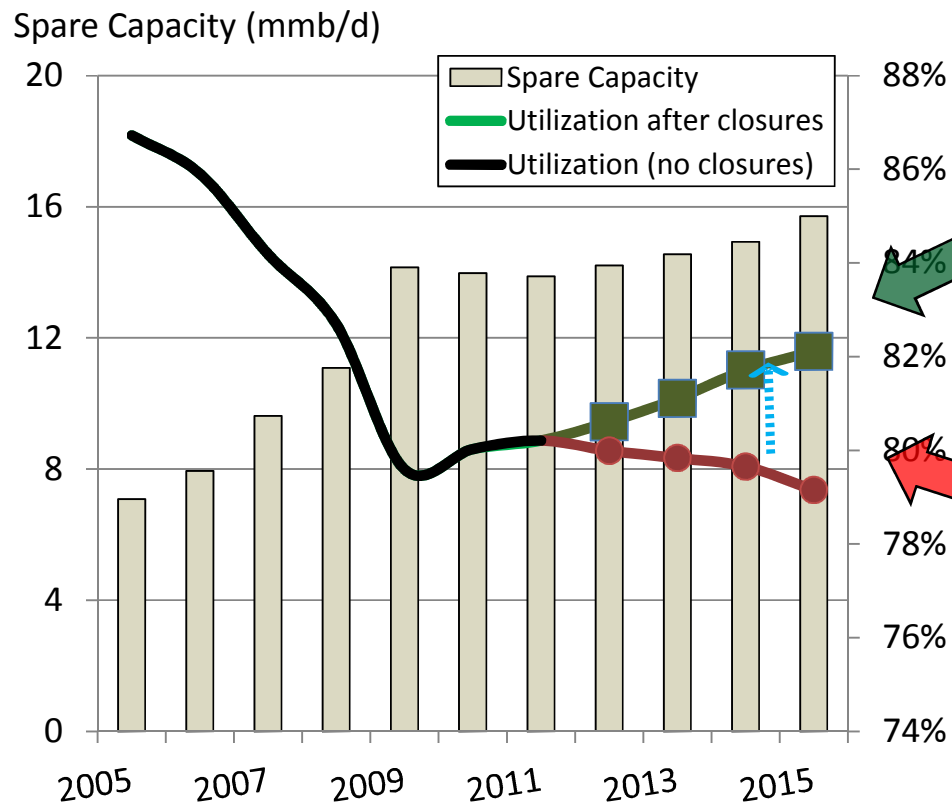
Future of Shale Gas Liquids Outside the US

- The US resources are less than 8% of global resources.
- Very little non-US information on organic content.
- Speed of development outside the US will be slow due to lack of well servicing infrastructure.
- Shale gas requires pipeline infrastructure and a market.
- Shale gas exploration in China, Australia, Poland, and Argentina.
- What is the potential for shale gas liquids by 2020-25? 5 mmb/d? 10 mmb/d? Equivalent to Iraq or Saudi Arabia production?

***Refining Sector: Near-Term Outlook OK,
but 2015-17 will be Difficult.
Will Enough Capacity be Closed?***

Pressure on Refining Sector—Falling Utilization

Global Refining Capacity and Utilization Rates

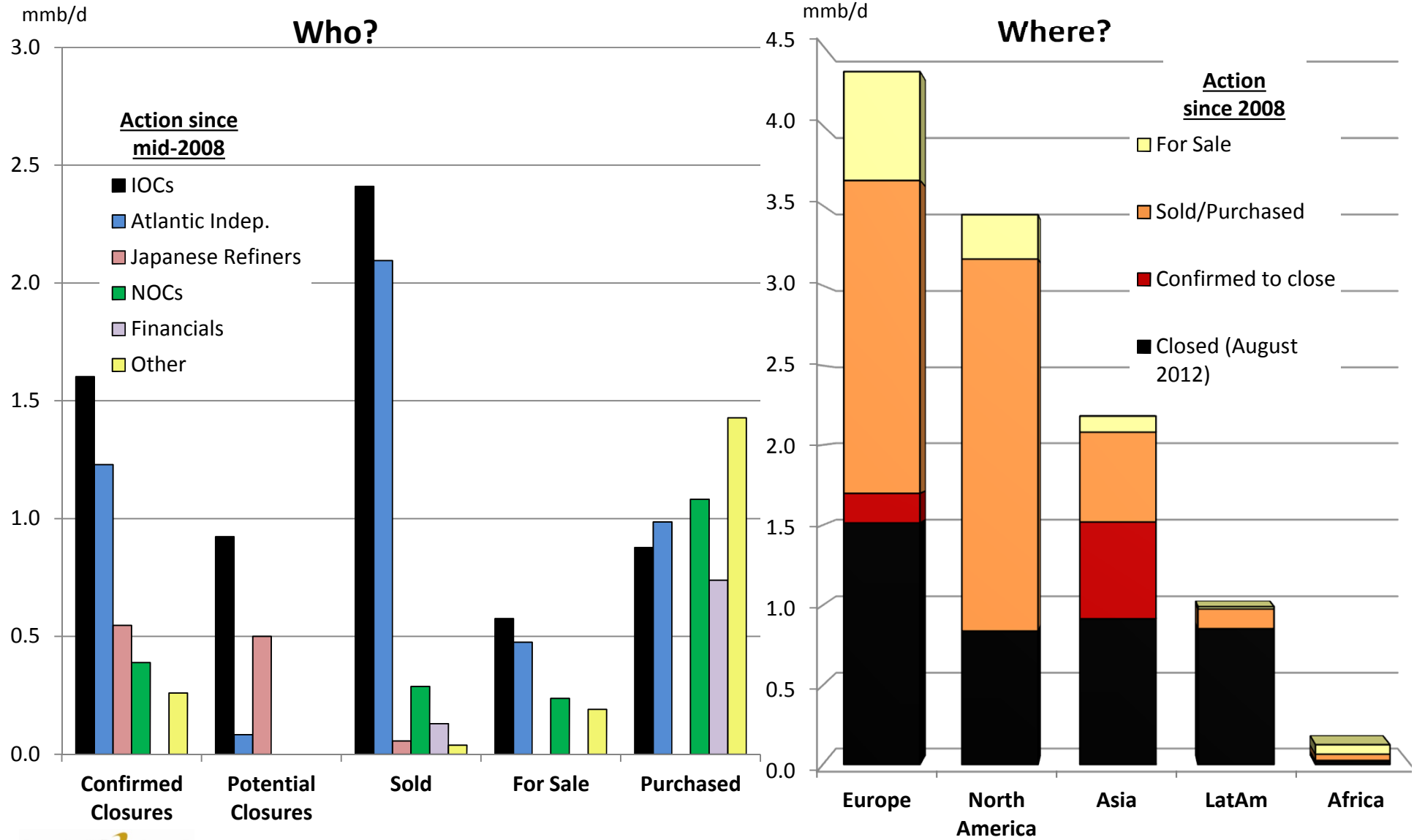


To bring utilization rates back up to 82-83% globally will require closure of around 7 mmb/d of capacity between 2009 and 2015. (2 mmb/d already confirmed)

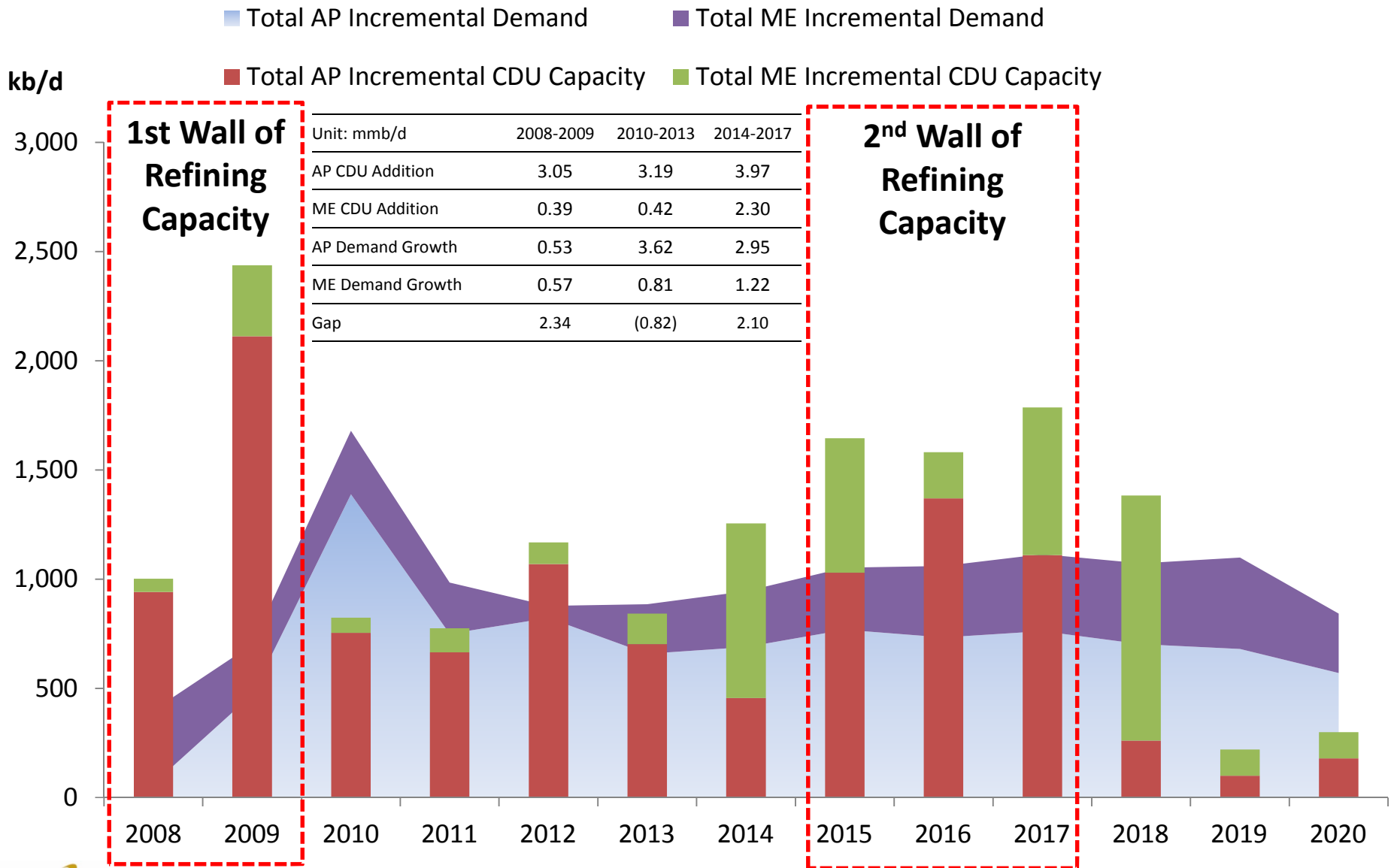
On the basis of current capacity + scheduled expansions, global utilization rates are set to fall to about 79% by 2015.

This is not feasible on a sustainable basis!

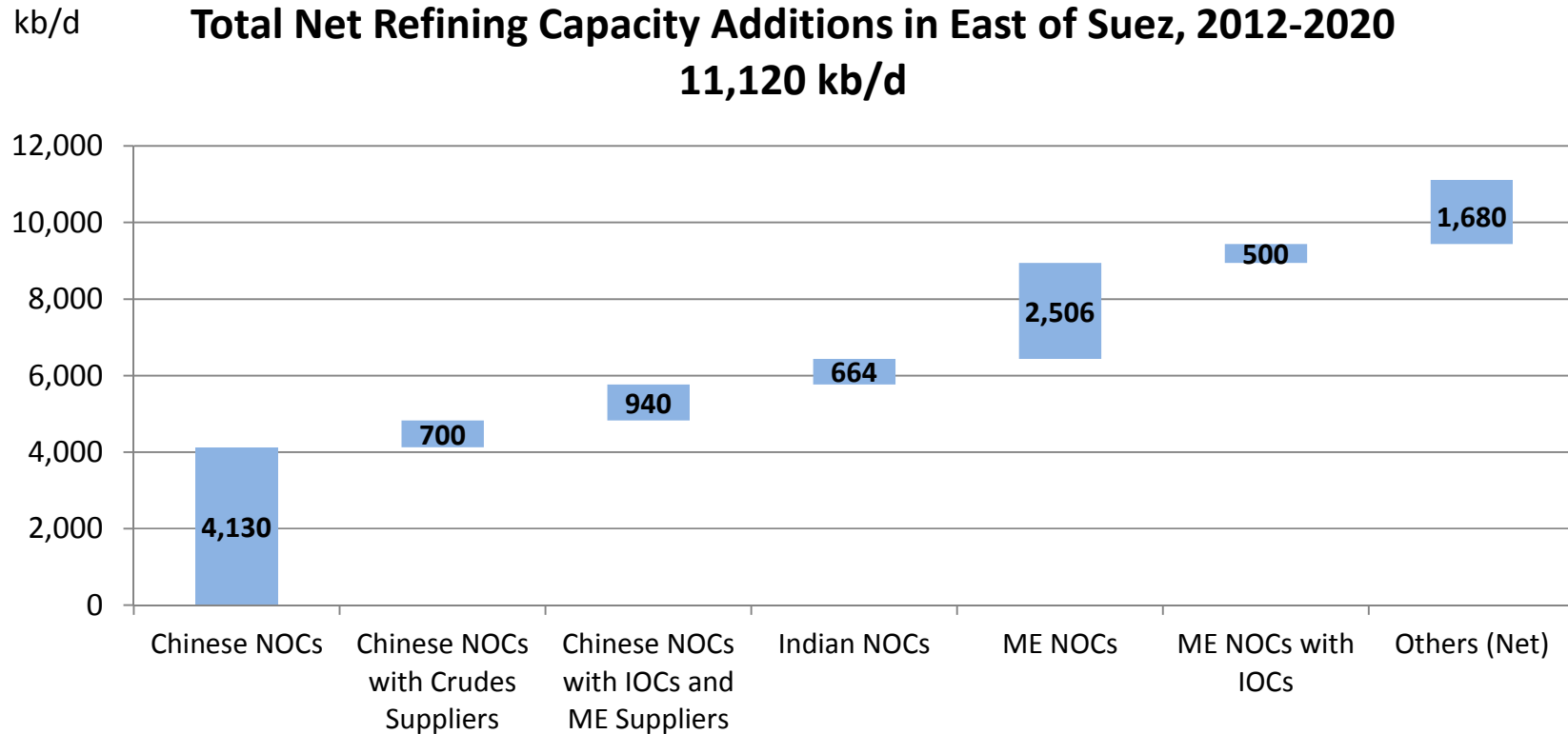
Refinery Closures and Sales Since 2008



East of Suez Refinery Build and Demand Growth

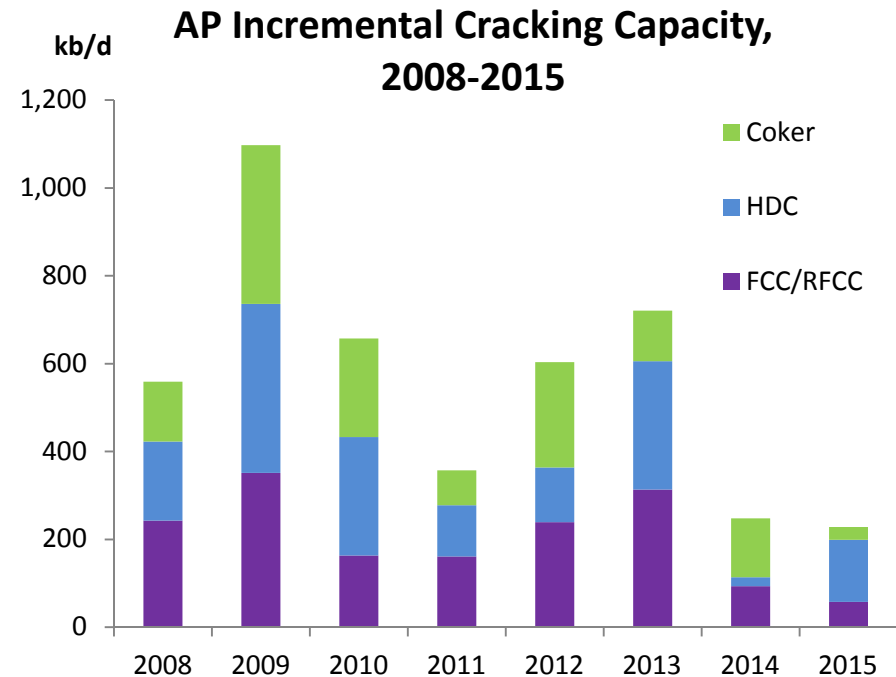
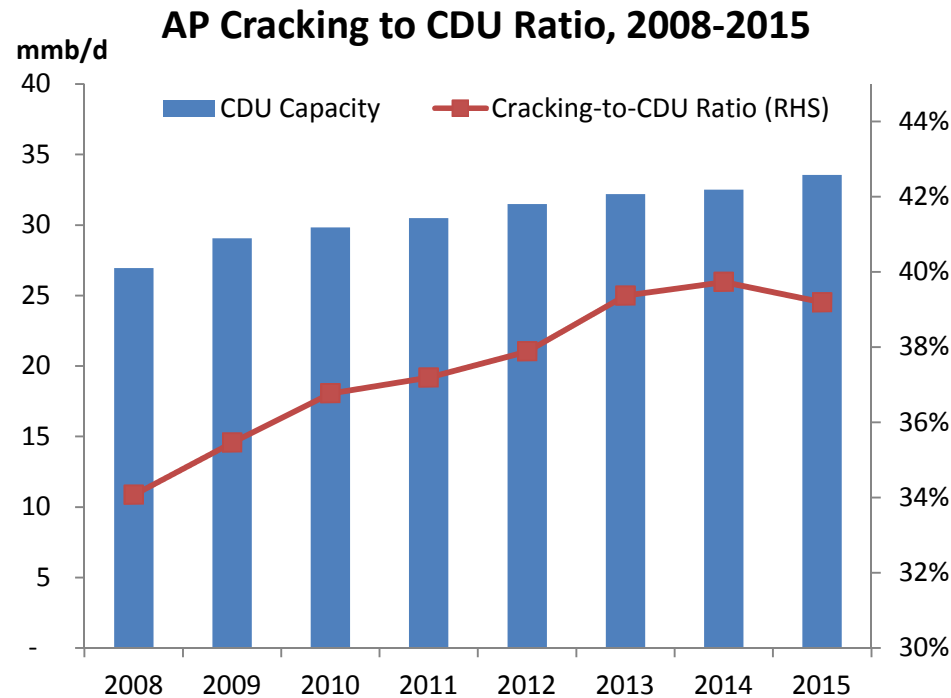


Who is Building East of Suez?



- **NOCs** will be involved in **more than 90%** of the refining capacity expansions in 2012-2020.
- Unlike the 2001-2010 period, independents will build much less refining capacity.
- IOCs are only involved in joint-venture projects with Chinese and Middle East NOCs.

Asia Pacific Refineries Becoming More Complex



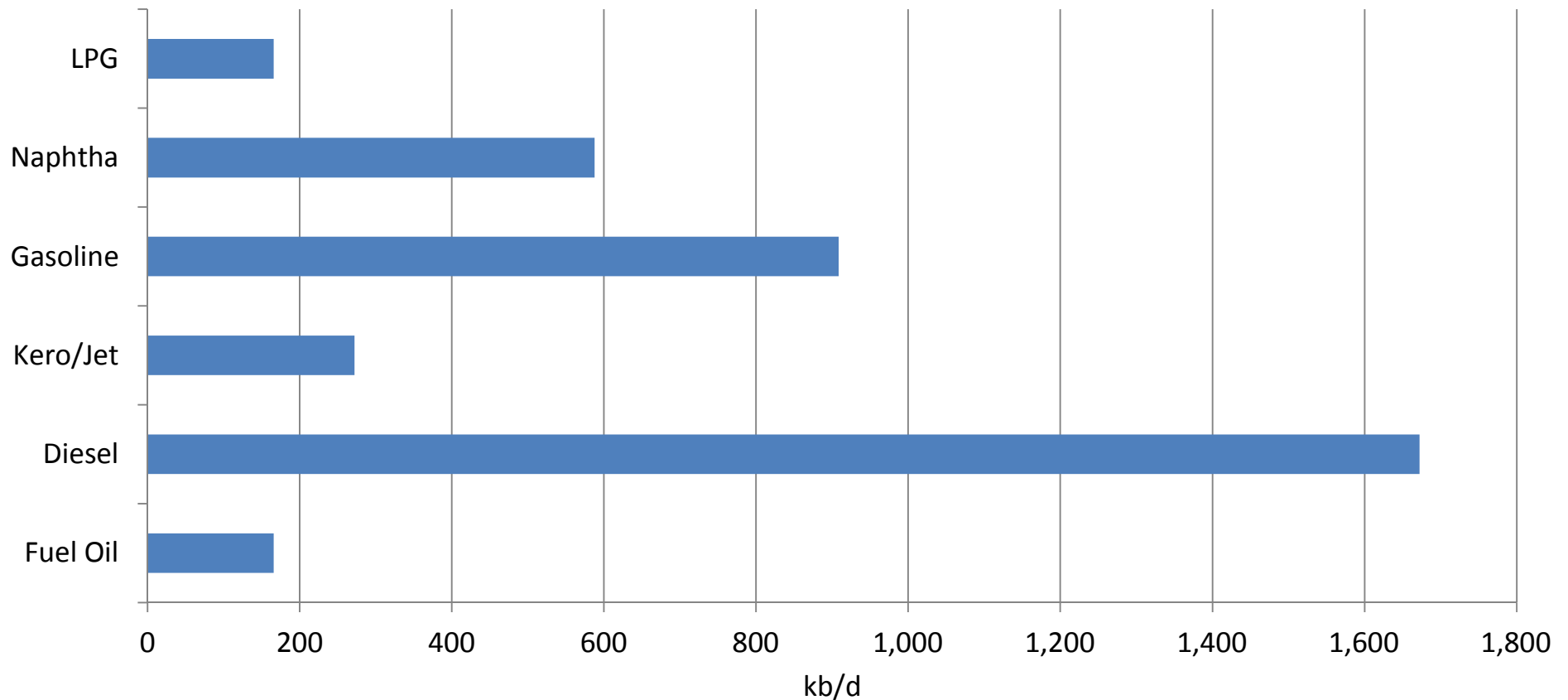
Thermal cracking/Vis-breaking is not included because almost no new builds/expansions

Asia Pacific refineries are becoming more complex with higher conversion ratios, thus **more fuel oil will be converted to gasoline and diesel, leading to higher surplus of transportation fuels and larger deficit of fuel oil.**

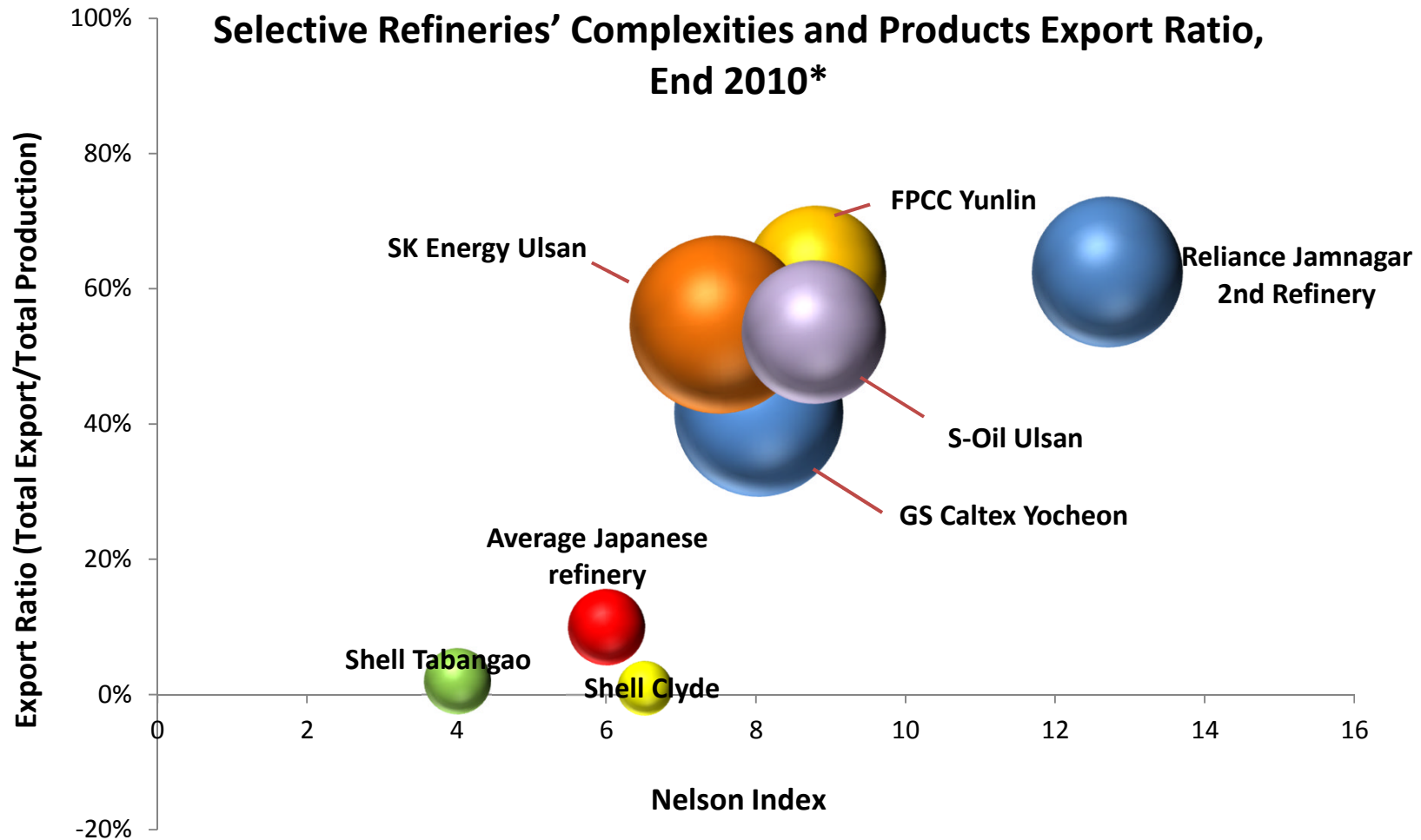
Incremental East of Suez Refinery Supply: 2010-2015

Additional upgrading capacity increases East of Suez gasoline and diesel/gasoil supply significantly between 2010-2015.

Has too much upgrading been planned?



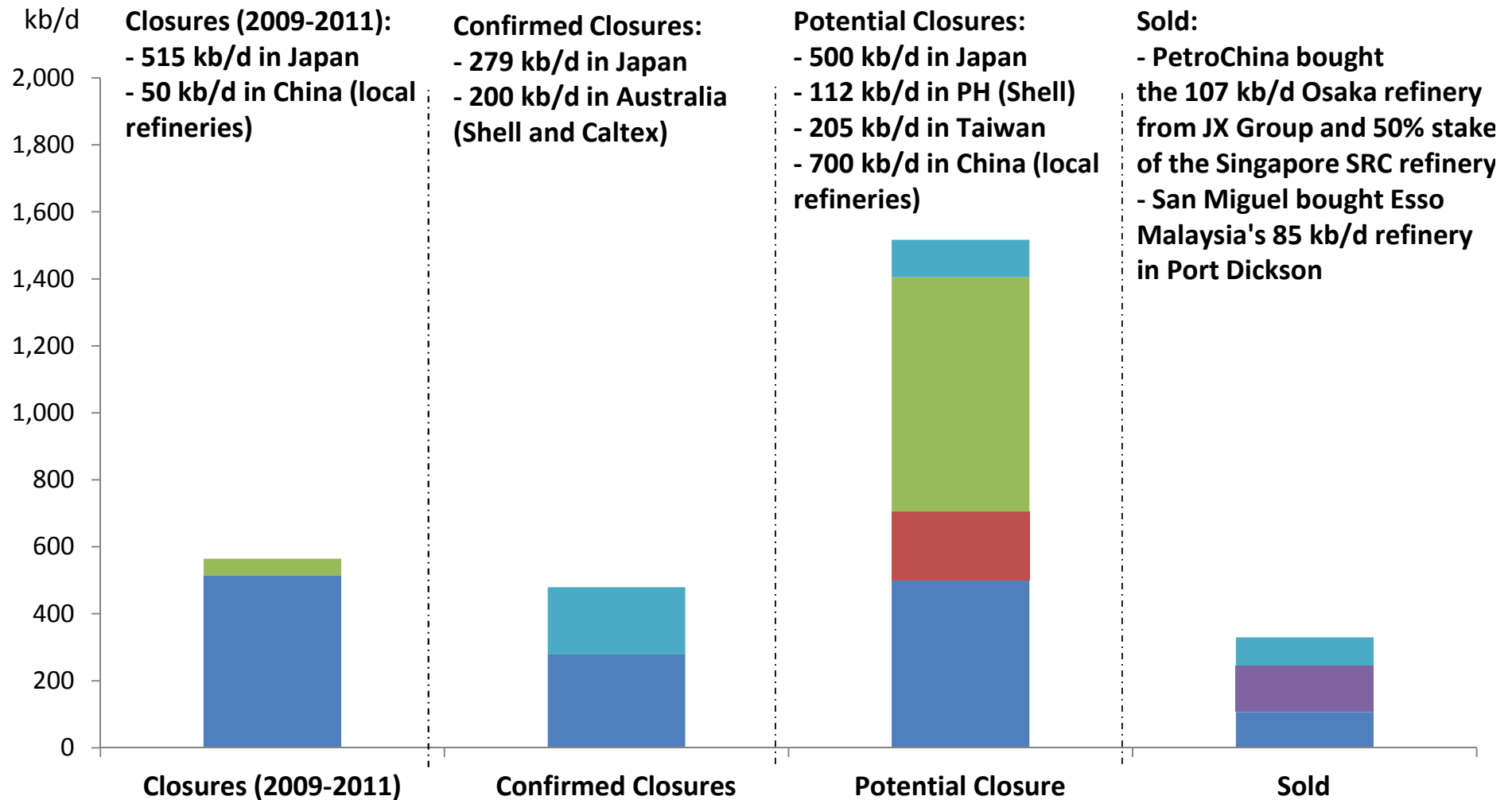
Survival of the Fittest?



* Note: the bubble size represents the size of the refinery

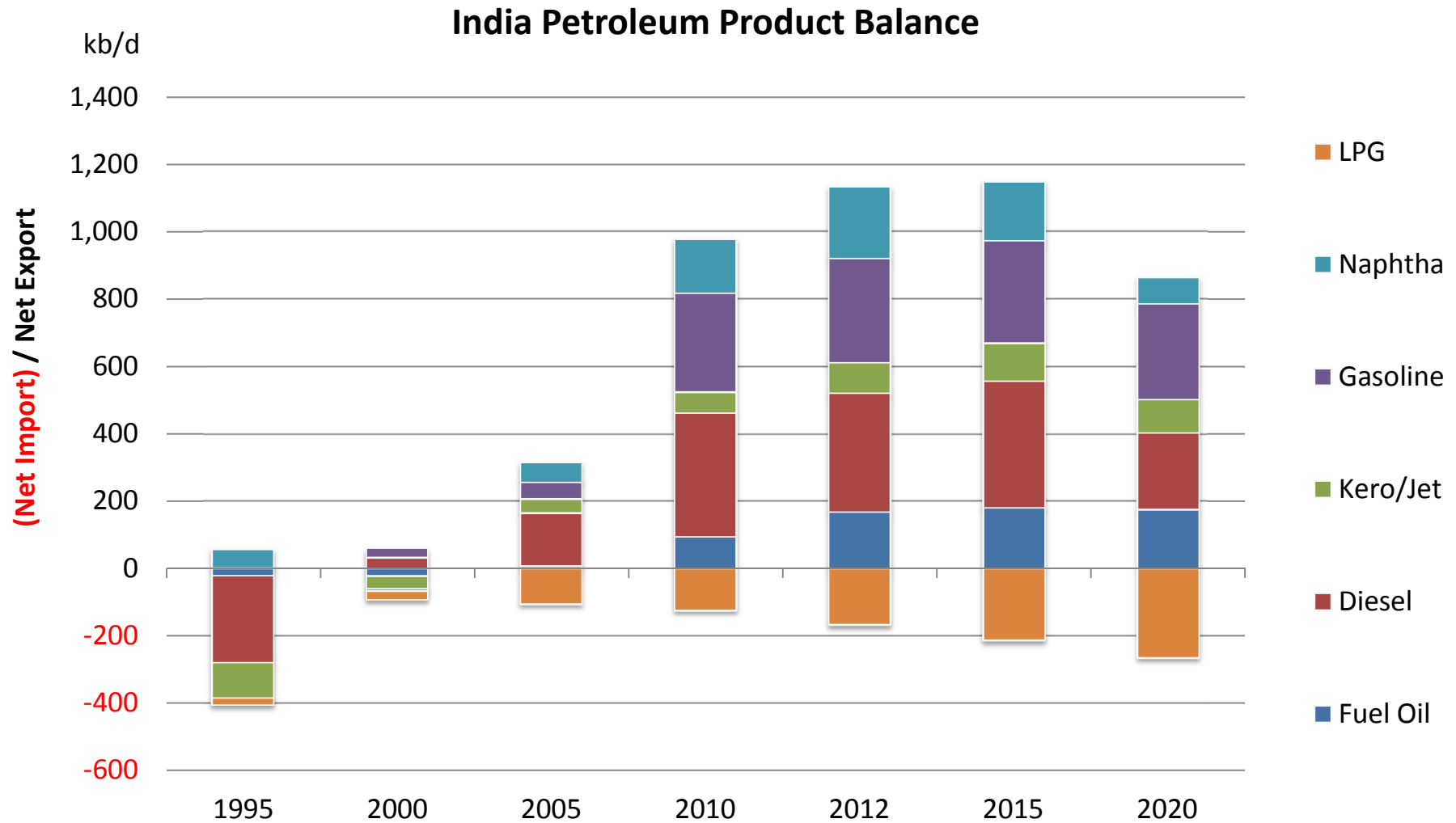
Refinery Closures and Sales in Asia

■ Japan ■ Taiwan ■ China ■ Singapore ■ IOCs (Ex-Japan)

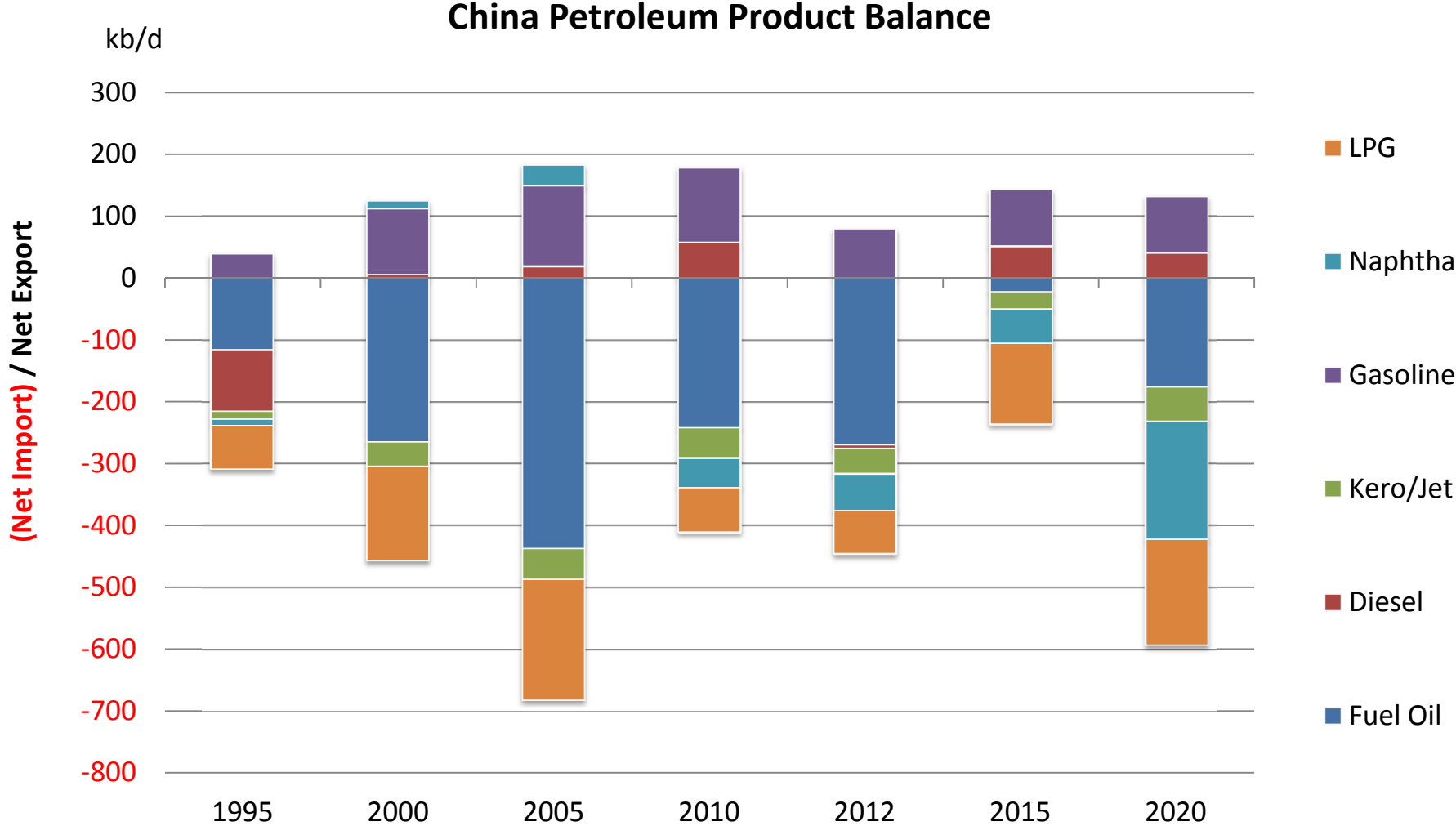


***East of Suez Products Trade: More Gasoline
and Diesel Must Leave the Region***

India—Fearless Push Forward



China—Deficit in Products Expected to Enlarge by 2020



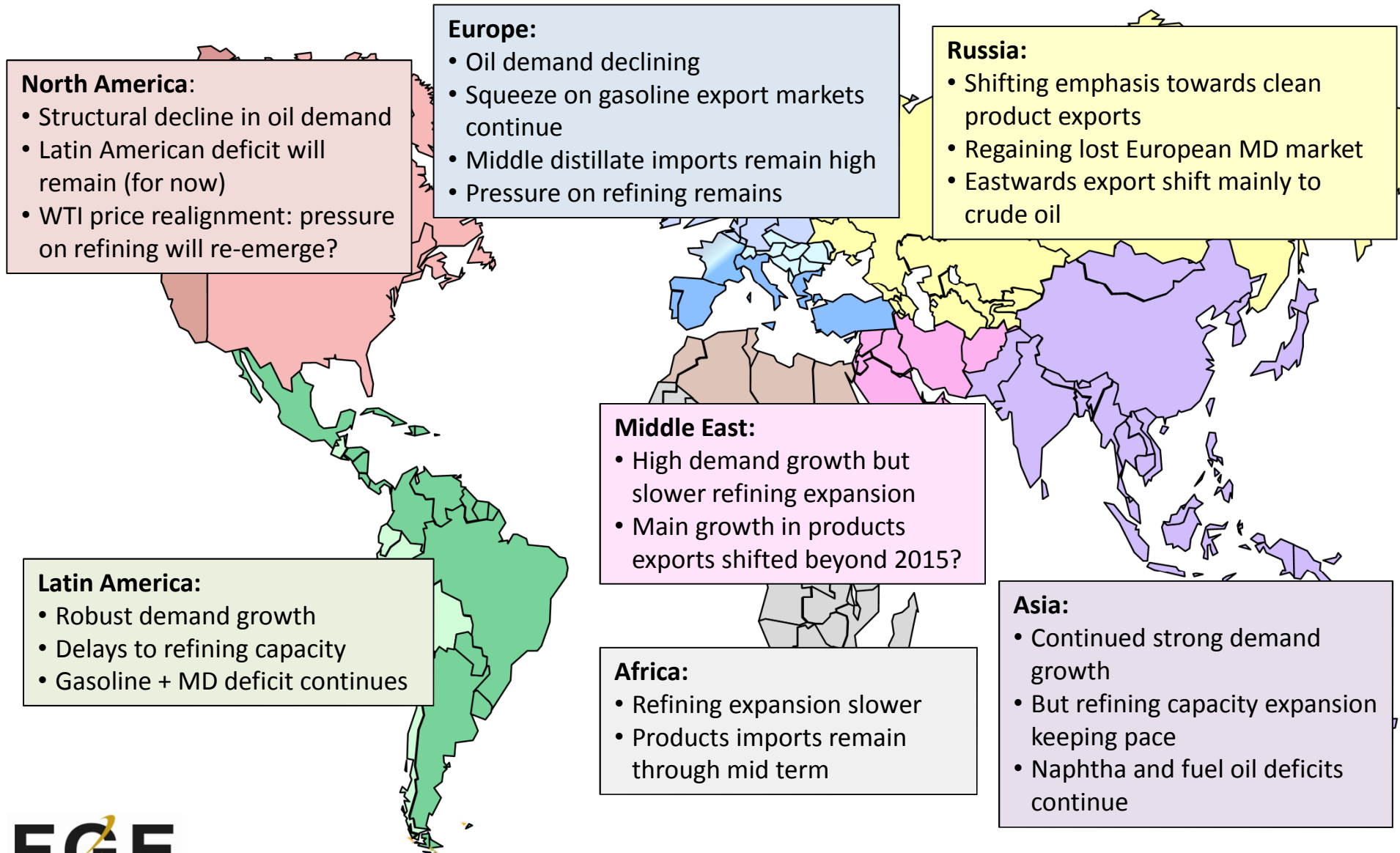
East of Suez Net Products Exports

kb/d	2010	2015	2020
LPG	38	50	81
Naphtha	-439	-451	-882
Gasoline	221	73	313
Kero/jet	1,018	737	764
Diesel	907	828	968
Fuel Oil	-927	-710	-838

Key Developments:

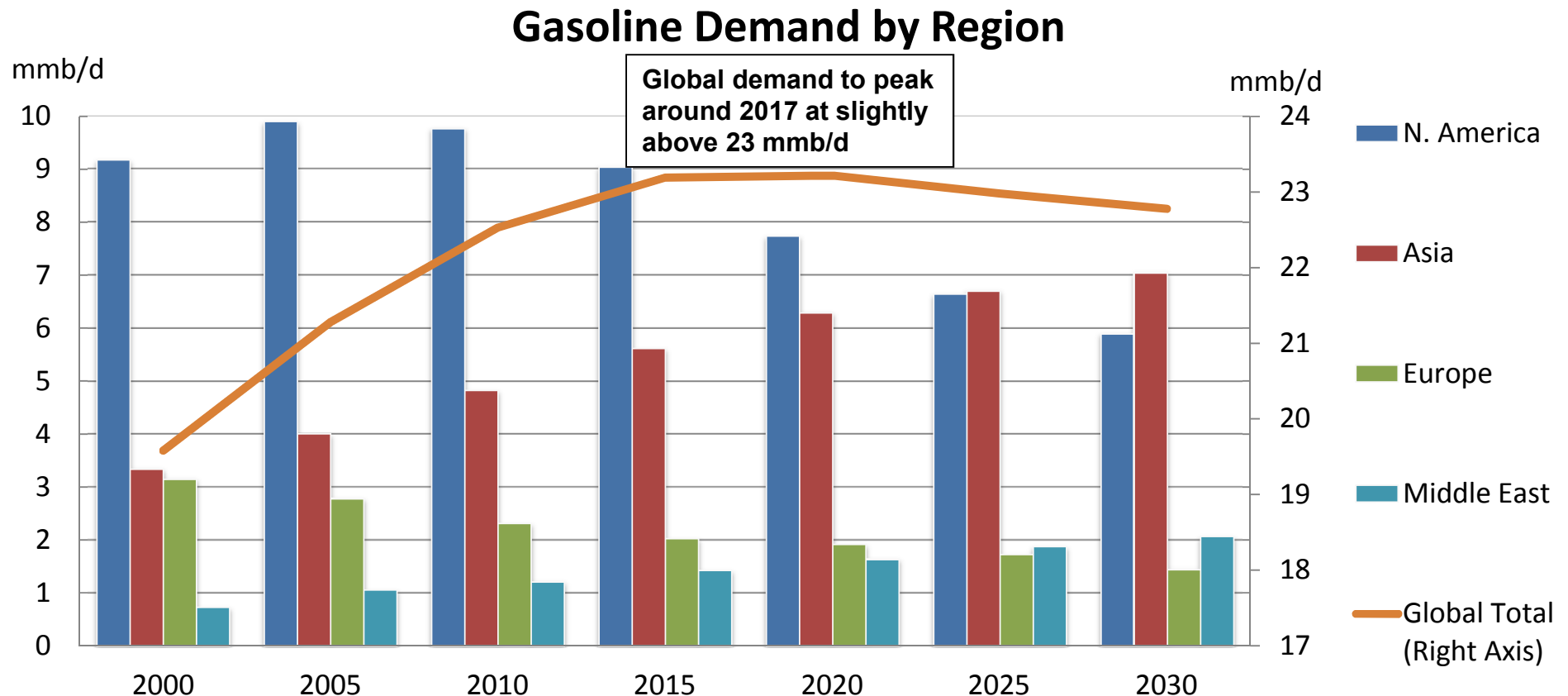
- Naphtha and fuel oil continue to be in large net deficit.
- Gasoline and middle distillates net exports set to increase due to rapid expansion of refining capacity.

Regional Products Trade – Pointers for the Future



Gasoline: A Fuel of the Past?

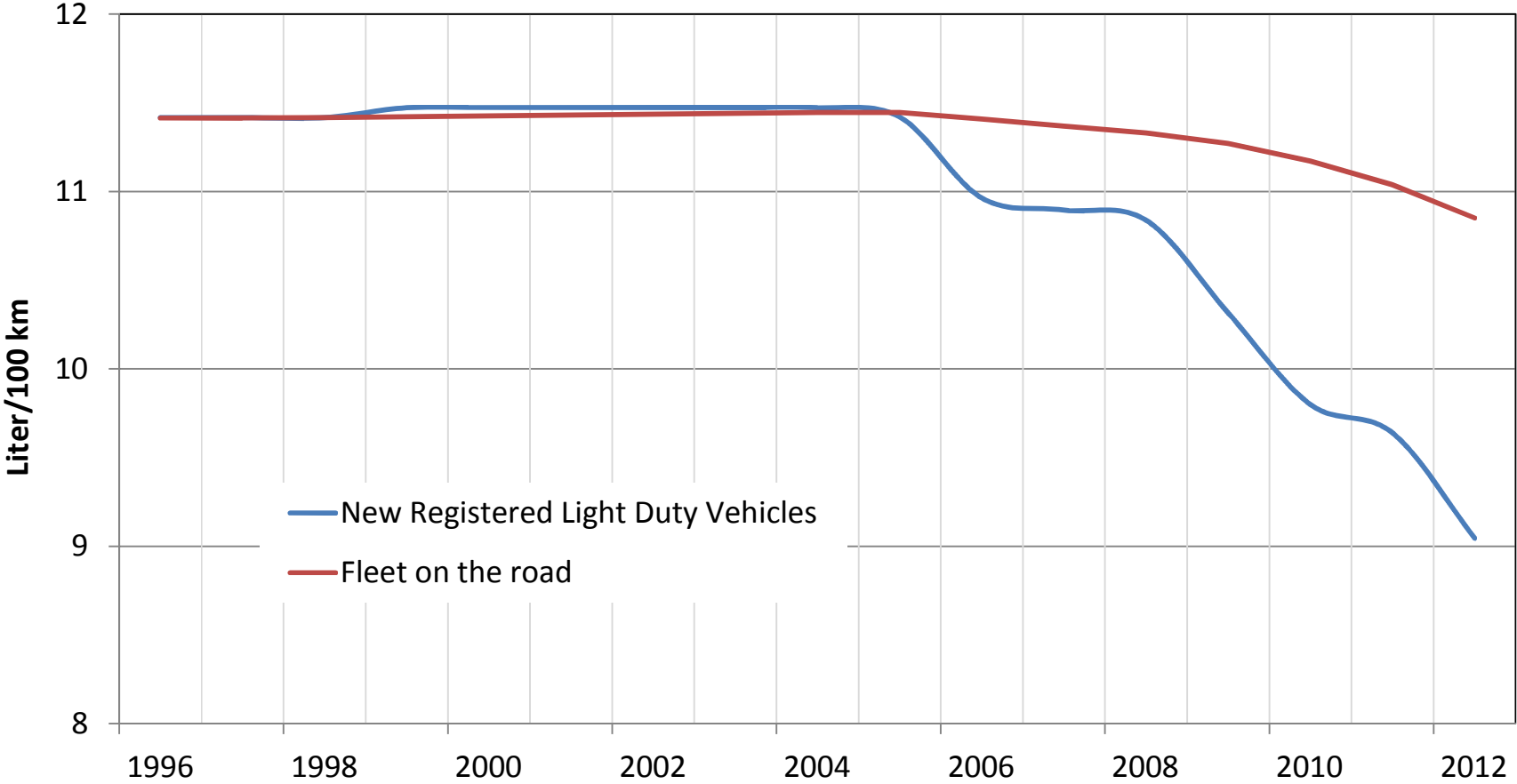
Bearish Outlook for Global Gasoline Demand



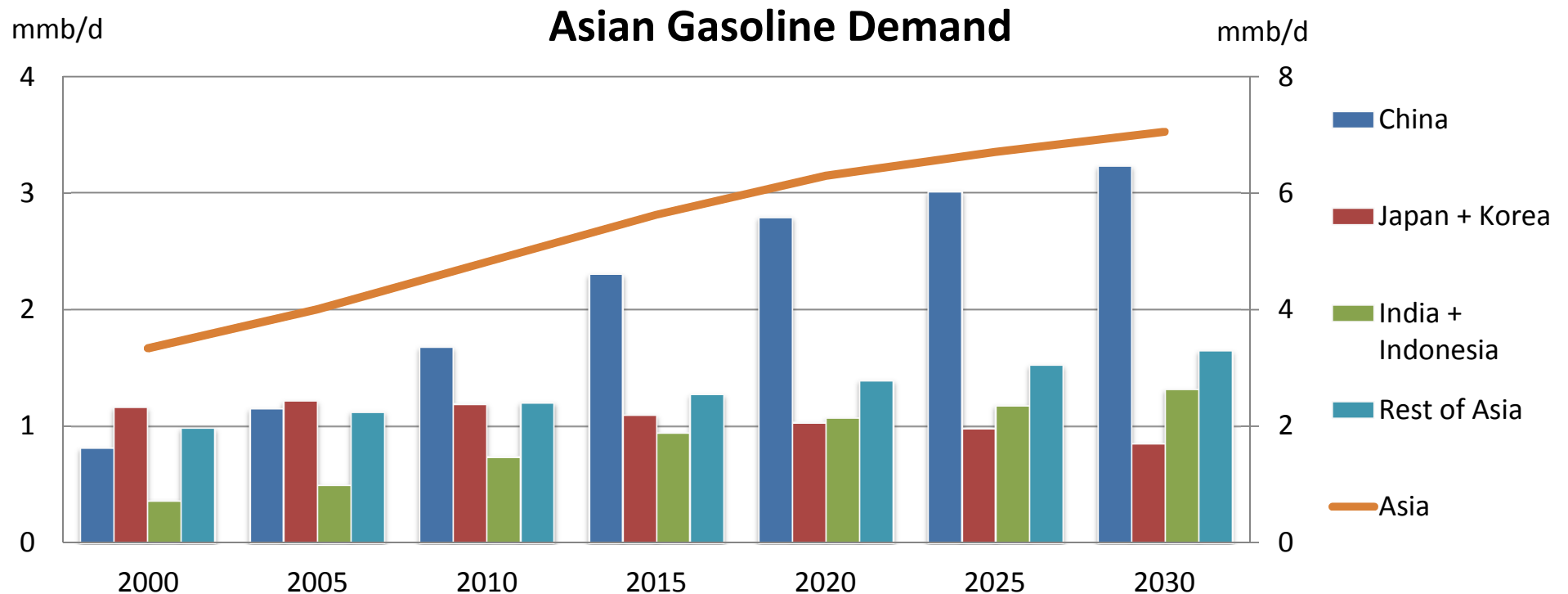
- Bearish outlook, but gasoline will still remain world’s major road transport fuel.
- OECD demand set to decline—with the largest drop in North America **led by the US**.
- Non-OECD Asia will drive gasoline demand growth.

US Vehicle Efficiency—Affecting Demand Trend Now

Gradual introduction of more efficient vehicles is starting to impact fleet average



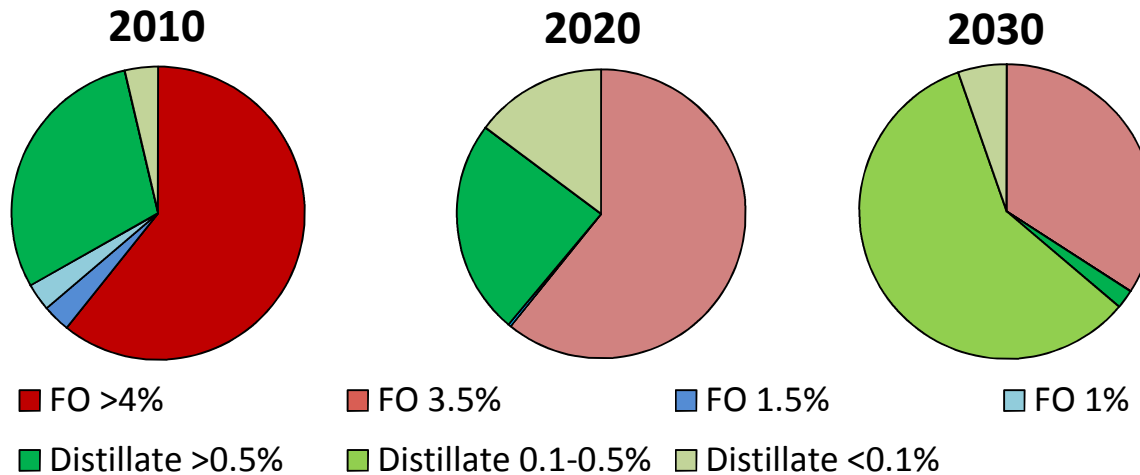
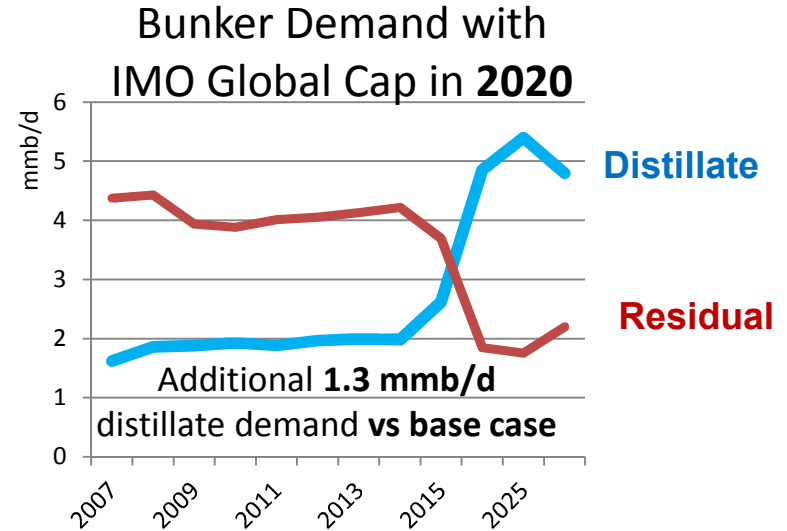
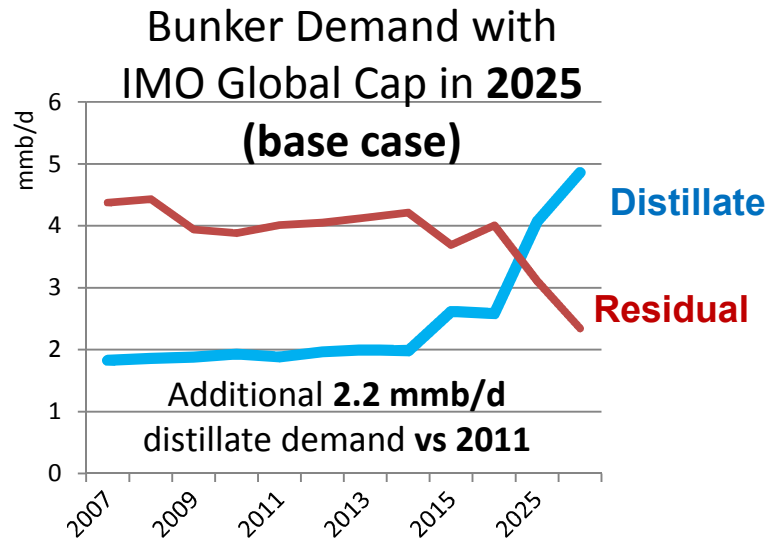
Asian Gasoline Demand Will Grow, But for How Long?



- China's gasoline demand to grow by more than 500 kb/d in the next five years and keep rising to 2.8 mmb/d in 2020 due to massive fleet expansion. Passenger car fleet to grow to some 210 million in 2020 and 250 million in 2030.
- Demand growth in India and Indonesia is also expected to be strong.
- However, new technologies like engine downsizing, fuel efficient tires, hybrid vehicles, etc., will cap overall gasoline demand growth strongly in the next few decades.

Bunker Sector: Specification Changes to Impact Bunker Demand

How will Specification Changes Impact Bunker Demand?



Source: Outlook for Marine Bunkers and Fuel Oil to 2030 (FGE/Robin Meech)

Thank You

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Appendix

WORLD OIL SUPPLY/DEMAND & STOCK CHANGE

	2010	1Q11	2Q11	3Q11	4Q11	2011	1Q12	2Q12	3Q12	4Q12	2012	1Q13	2Q13	3Q13	4Q13	2013
DEMAND																
USA	19.2	19.1	18.8	19.0	18.9	19.0	18.4	18.7	18.7	18.7	18.6	18.5	18.5	18.5	18.5	18.5
Canada/Mexico	4.4	4.3	4.4	4.5	4.4	4.4	4.4	4.6	4.7	4.5	4.6	4.5	4.4	4.5	4.4	4.5
Latin America	6.6	6.6	6.7	6.9	6.8	6.8	6.8	6.9	7.0	7.0	6.9	6.9	7.0	7.2	7.1	7.1
W Europe	14.9	14.5	14.4	15.1	14.5	14.6	13.9	14.0	14.3	14.1	14.1	13.8	13.5	13.9	13.9	13.8
FSU (<i>apparent demand</i>)	4.5	4.4	4.2	4.9	4.9	4.6	4.6	4.7	5.0	5.5	4.9	5.1	4.9	5.1	5.0	5.0
Other Europe	0.8	0.8	0.8	0.8	0.7	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Japan	4.5	4.9	3.9	4.4	4.9	4.5	5.4	4.4	4.6	4.9	4.8	5.1	4.1	4.2	4.6	4.5
Korea/Aus/NZ	3.5	3.7	3.3	3.5	3.6	3.5	3.7	3.5	3.5	3.7	3.6	3.8	3.6	3.5	3.8	3.7
China (<i>apparent demand, excl. strategic</i>)	9.2	9.9	9.6	9.4	9.8	9.7	10.1	10.0	9.2	10.2	9.9	10.3	10.2	9.7	10.8	10.3
Other Asia-Pacific	10.6	10.8	10.8	10.5	11.0	10.8	11.1	11.2	10.8	11.3	11.1	11.4	11.4	11.5	11.6	11.5
Africa	3.3	3.3	3.3	3.3	3.4	3.3	3.4	3.4	3.5	3.5	3.4	3.5	3.5	3.6	3.6	3.5
MEast	8.2	8.0	8.3	8.9	8.6	8.5	8.5	8.7	9.4	8.7	8.8	8.5	9.0	9.5	9.1	9.0
Total Demand	89.7	90.3	88.5	91.2	91.5	90.4	91.0	90.8	91.3	92.8	91.5	92.1	90.8	91.9	93.1	92.2
SUPPLY																
USA	7.6	7.6	7.8	7.8	8.3	7.9	8.5	8.6	8.7	8.9	8.7	8.9	9.0	9.2	9.3	9.1
Canada	3.4	3.5	3.4	3.6	3.7	3.6	3.7	3.7	3.7	3.8	3.7	3.8	3.8	3.9	4.0	3.9
Mexico	3.0	3.0	3.0	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.8	2.8	2.8
North Sea	3.8	3.7	3.4	3.2	3.4	3.4	3.4	3.2	2.8	3.1	3.1	3.3	3.2	2.9	2.9	3.1
Total FSU	13.4	13.5	13.5	13.4	13.4	13.5	13.6	13.5	13.4	13.6	13.5	13.6	13.6	13.7	13.6	13.6
China	4.1	4.2	4.1	4.0	4.0	4.1	4.1	4.1	4.1	4.2	4.1	4.2	4.2	4.2	4.2	4.2
Other Non-OPEC	12.6	12.7	12.4	12.6	12.6	12.6	12.0	11.9	12.2	12.3	12.1	12.2	12.3	12.3	12.4	12.3
Total Non-OPEC Output (Crude/NGLs)	47.9	48.2	47.6	47.5	48.3	47.9	48.2	47.9	47.8	48.8	48.2	48.9	49.0	49.0	49.2	49.0
Bio-liquids (ethanol/bio-gasoline, etc)	1.9	2.0	2.0	2.0	2.1	2.0	2.0	2.0	2.0	2.1	2.0	2.1	2.1	2.1	2.1	2.1
GTL/CTL	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.3	0.4	0.4	0.4	0.4	0.4
Processing Gain, balancing item etc	4.2	4.0	4.0	4.0	4.0	4.0	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9
Non-OPEC Supplies (incl. Indonesia)	54.2	54.5	53.9	53.8	54.7	54.2	54.4	54.1	54.0	55.2	54.4	55.3	55.4	55.4	55.6	55.4
Libya	1.5	1.2	0.2	0.1	0.6	0.5	1.2	1.4	1.5	1.6	1.4	1.6	1.6	1.6	1.6	1.6
Iraq	2.4	2.7	2.7	2.7	2.6	2.7	2.6	2.9	3.2	3.2	3.0	3.4	3.5	3.5	3.5	3.5
Other OPEC	25.5	26.4	27.0	27.6	27.8	27.2	27.9	27.9	27.5	27.1	27.6	26.5	26.1	26.1	25.6	26.1
Total OPEC Crude (excl. Indonesia)	29.4	30.3	29.9	30.4	31.0	30.4	31.7	32.2	32.2	31.9	32.0	31.5	31.2	31.2	30.7	31.2
NGLs/other	5.4	5.6	5.6	5.7	5.8	5.7	5.9	6.0	6.0	6.0	6.0	6.1	6.2	6.2	6.2	6.2
Total OPEC (excl. Indonesia)	34.8	35.9	35.5	36.1	36.8	36.1	37.6	38.2	38.2	37.9	38.0	37.6	37.4	37.4	36.9	37.4
Total Supply	89.0	90.4	89.4	89.9	91.5	90.3	92.0	92.3	92.2	93.1	92.4	92.9	92.8	92.8	92.5	92.8
STOCK CHANGE																
OECD Company	0.0	-0.4	0.6	-0.1	-0.7	-0.2	0.4	0.3	0.5	-0.2	0.3	-0.1	1.0	0.6	-1.3	0.0
Strategic/government (<i>incl. China</i>)	0.1	0.0	0.1	-0.3	0.2	0.0	0.1	0.2	0.2	0.1	0.1	0.1	0.2	0.1	0.1	0.1
Non-OECD/transit/floating/unreported	-0.8	0.5	0.2	-0.9	0.5	0.1	0.5	1.0	0.2	0.4	0.5	0.8	0.8	0.2	0.6	0.6
Implied Stock Change	-0.6	0.1	0.9	-1.3	0.0	-0.1	1.0	1.5	0.9	0.3	0.9	0.8	2.0	0.9	-0.6	0.8
Reference items																
Demand change year-on-year %	3.2%	2.7%	-0.1%	0.6%	1.0%	0.8%	0.8%	2.6%	0.1%	1.4%	1.2%	1.2%	0.0%	0.7%	0.3%	0.8%
Call on OPEC crude (no stock change)	30.0	30.2	29.0	31.7	31.0	30.5	30.7	30.7	31.3	31.6	31.1	30.7	29.2	30.3	31.3	30.4
FSU Net Oil Exports	9.6	9.6	9.7	9.0	9.0	9.3	9.6	9.4	8.9	8.5	9.1	8.9	9.1	9.0	9.1	9.0
End-period OECD company stocks (bill bbls)		2.59	2.64	2.63	2.57		2.61	2.64	2.68	2.66		2.65	2.75	2.80	2.68	
End-period OECD stock cover (days)		58	57	57	56		59	58	58	58		60	62	62	58	