



MEDIUM-TERM OIL MARKET REPORT

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International Energy Agency

2009

5th Asia Refining Conference
Singapore, October 2009



INTERNATIONAL ENERGY AGENCY

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Executive Summary

Refining: tough times ahead

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- **OECD refining industry faces several challenges :**
 - 2009 OECD demand 4mb/d lower than its 2007 peak,
 - OECD demand likely to contract by 1mb/d through to 2014
 - Results in a significant overhang of spare refining capacity

- **Non-OECD refining continues to expand due to demand growth and strategic investments**
 - Rapid build-up of capacity in China, India and the Middle East will alter product market flows

- **Rising supplies of OPEC NGL and condensate will depress OPEC supplies of medium and heavy sour crude**

- **Rising biofuels supplies will compete with refining to supply marginal barrels of gasoline and diesel**

- **Tighter environmental regulations ahead:**
 - Will necessitate high levels of capital expenditure at a time when cash flow is under pressure.
 - Could result in accelerated capacity rationalisation in OECD regions

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Demand

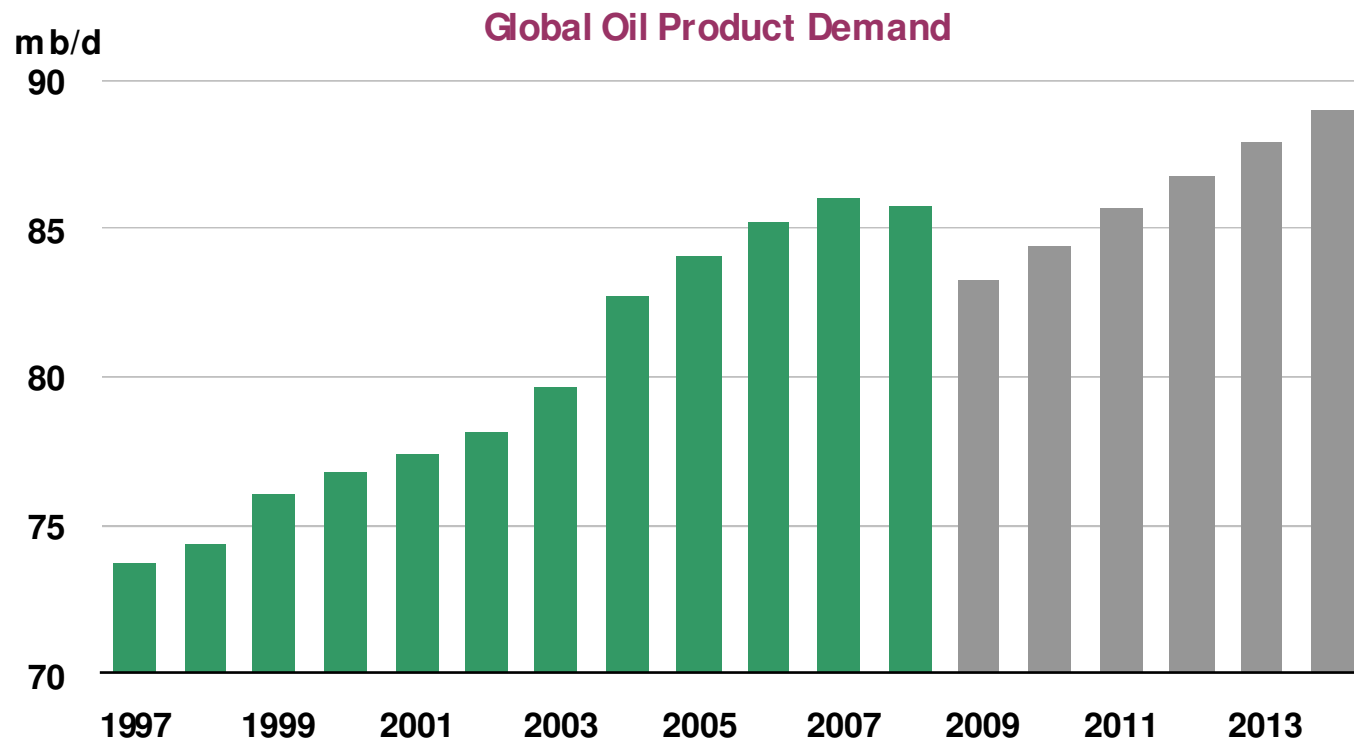
Oil demand: nearing 90 mb/d

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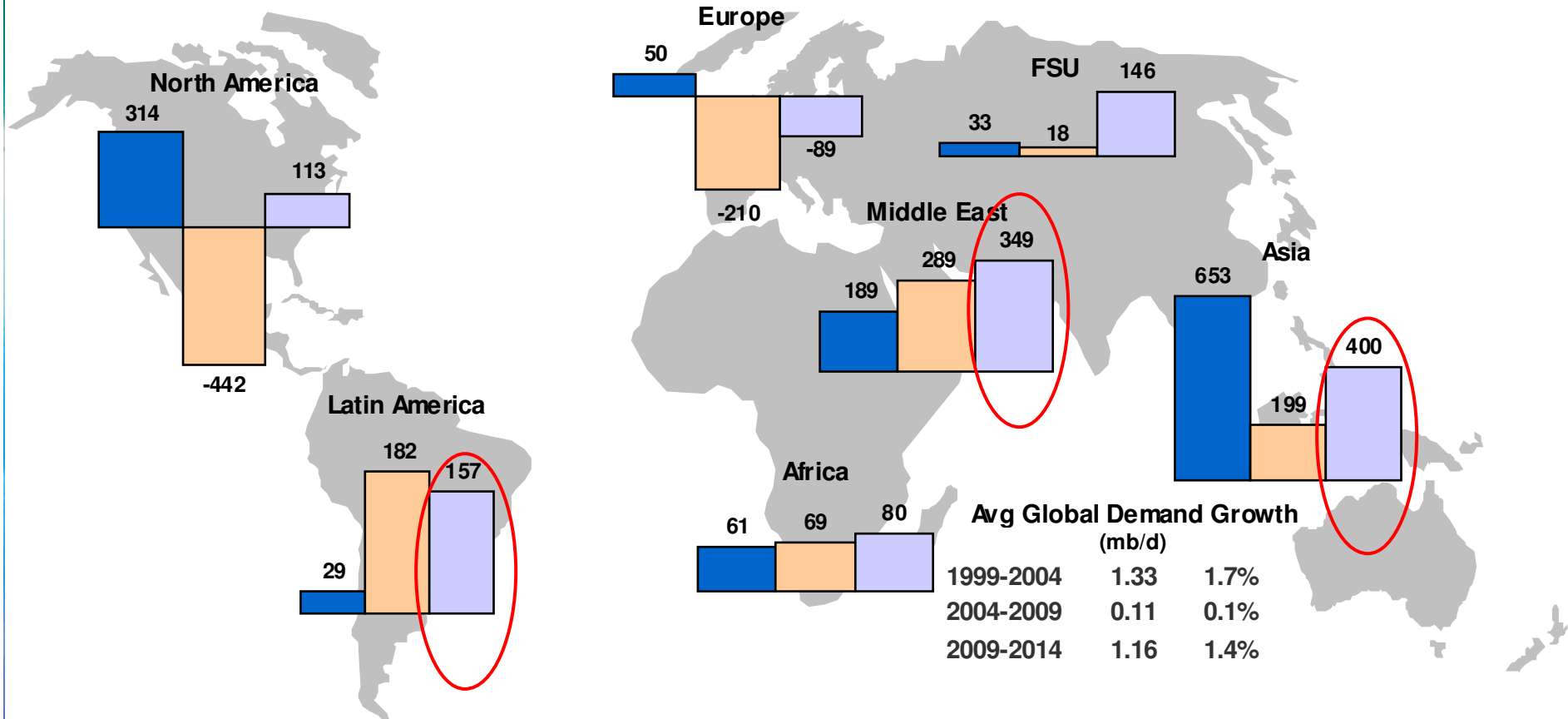


- Demand is projected to grow from 86 mb/d in 2008 to 89 mb/d by 2014
 - Significant downward revisions versus last year, still assumes robust economic recovery (2008: 94mb/d by 2013)
- Average yearly growth (2009-14): +1.4% or +1.2 mb/d per year

Growth driven by non-OECD &..

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Average Global Demand Growth 1999-2004/2004-2009/2009-2014
thousand barrels per day



- Growth will come from **emerging countries**: non-OECD to account for more than 50% of demand by 2014
- Advanced economies will see demand stagnate: interfuel substitution & greater efficiency



Transportation...

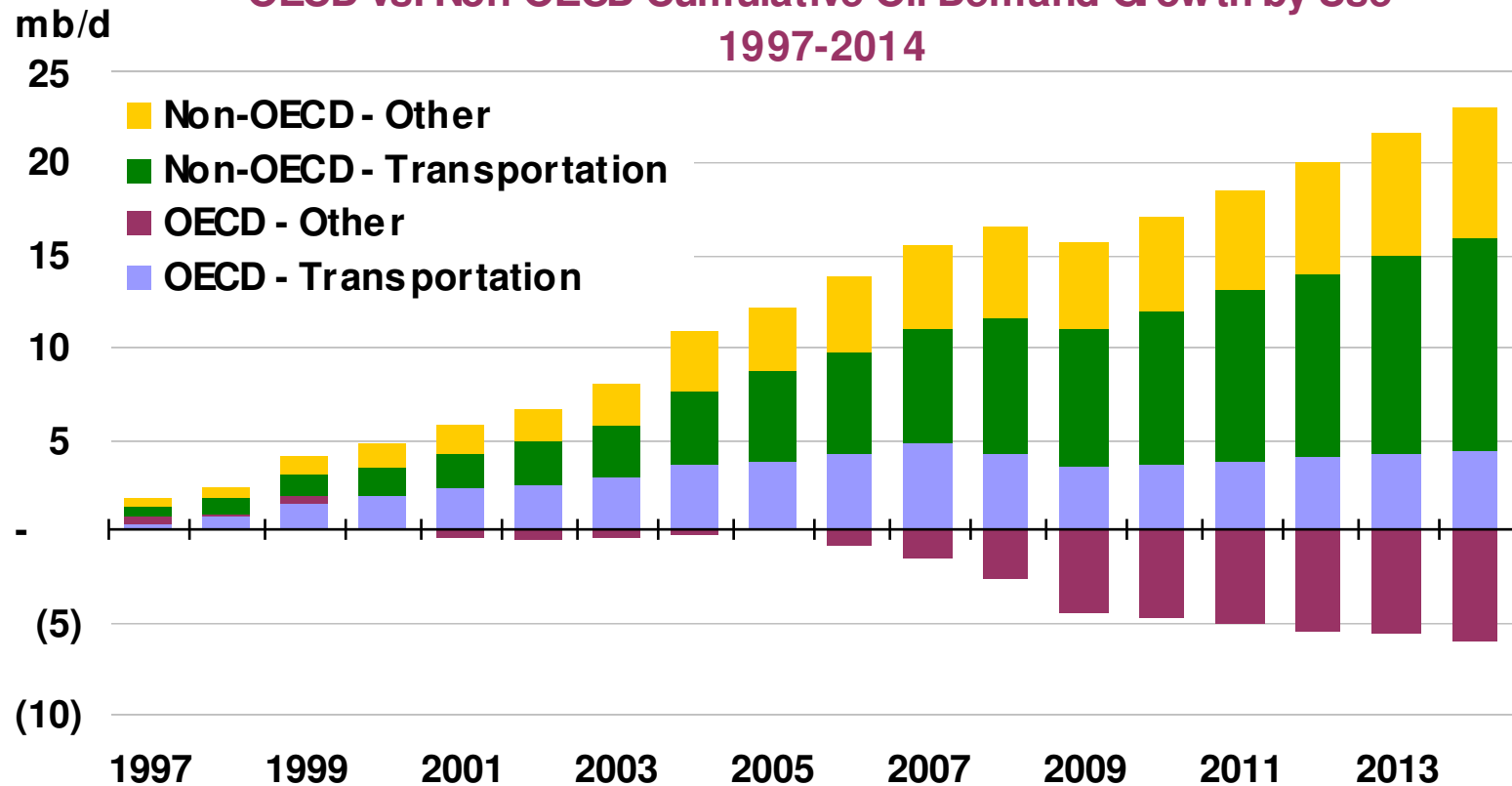
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OECD vs. Non-OECD Cumulative Oil Demand Growth by Use
1997-2014



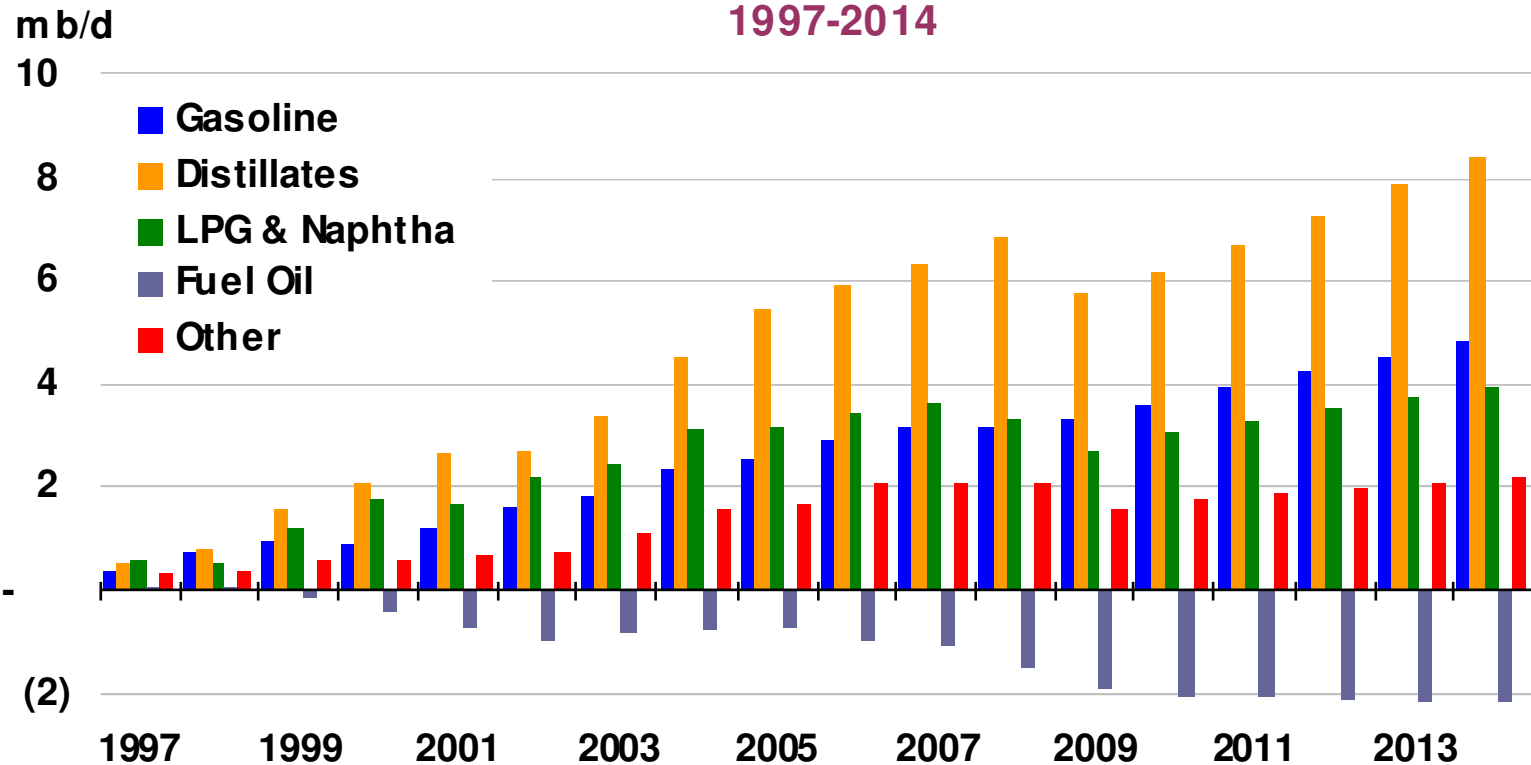
- **Transportation needs are expected to account for roughly 80% of total demand growth**
- **In the OECD, transportation demand will barely grow due to saturation & efficiency improvements in the US**

Challenges abound for refineries

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Global Cumulative Oil Demand Growth by Product
1997-2014



- **Transportation fuel growth will challenge refining**
- **Demand for distillates has grown faster than any other product categories – and will continue to do so**
- **Meanwhile, petrochemicals demand growth will boost LPG/naphtha**



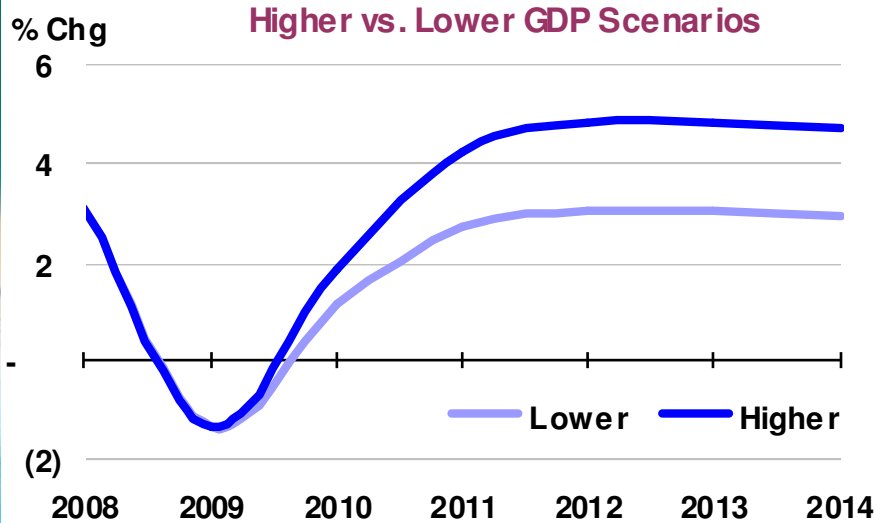
What if GDP growth is slower?

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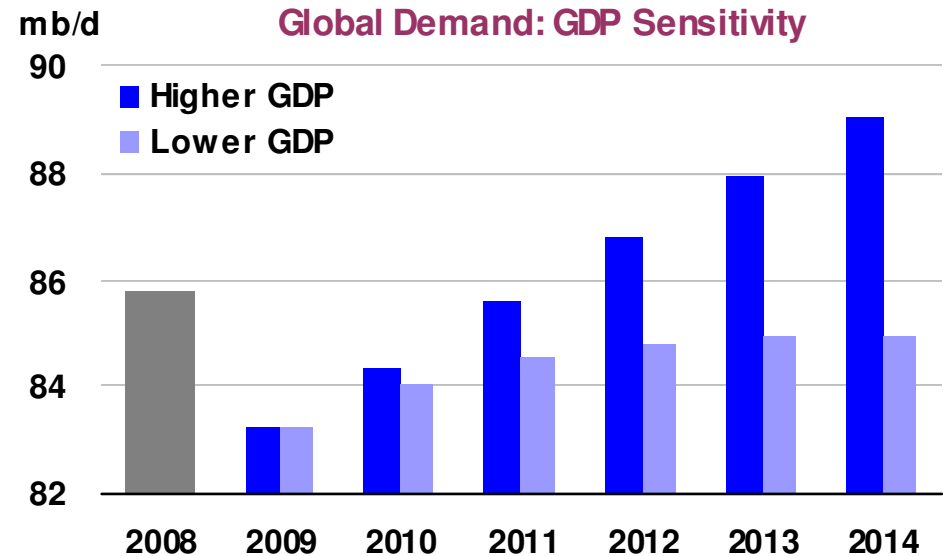


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■ This scenario entails a delayed recovery and lower long-term growth

■ It is purely illustrative, as it does not account for medium-term iterations – i.e., oil price adjustments and effects



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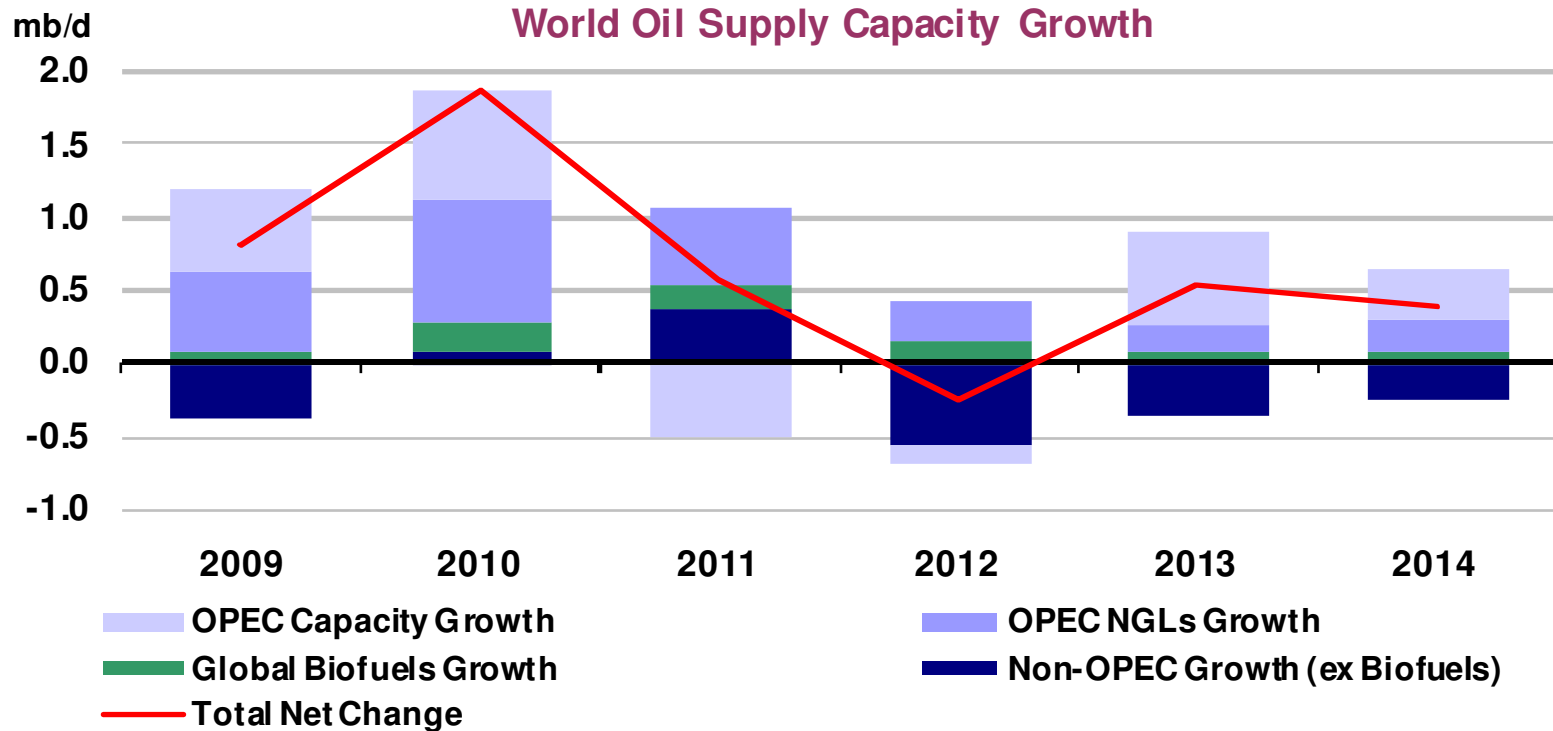
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Supply

Supply growth driven by OPEC

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■ Supply capacity growth in 2008-14 of 4.0 mb/d

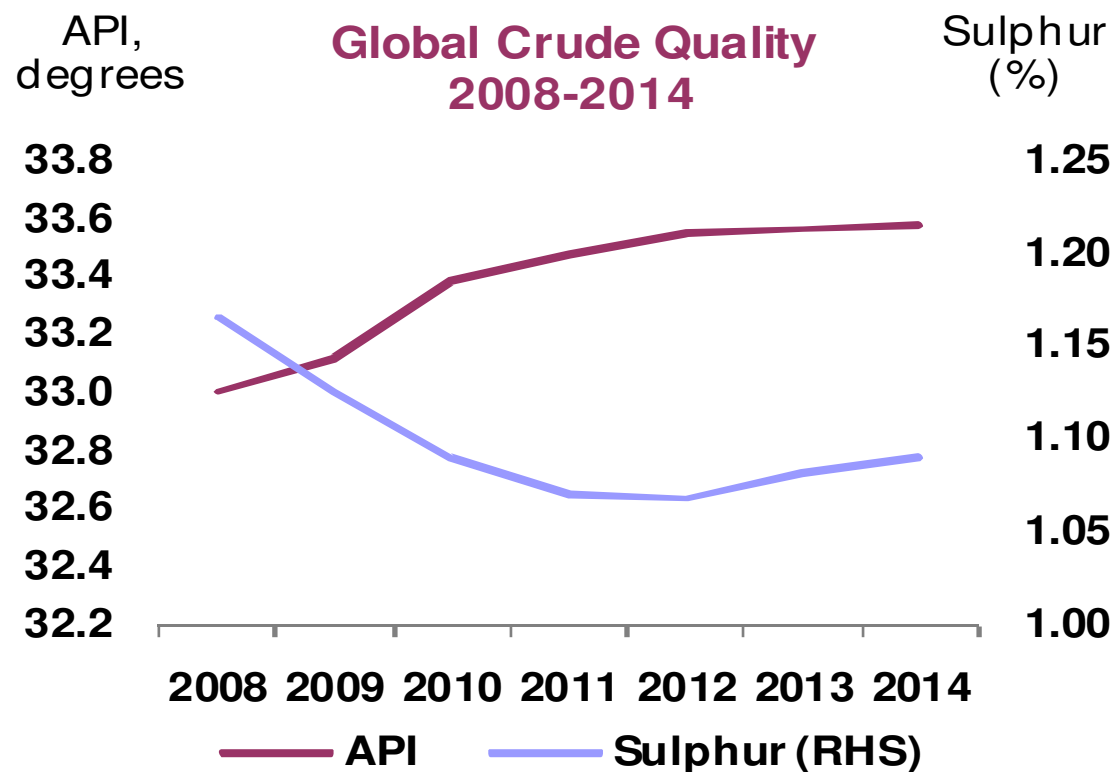
- OPEC NGLs +2.6 mb/d,
- OPEC Crude +1.7mb/d
- Biofuels +0.7mb/d,
- Non-OPEC crude -2.1mb/d



Crude quality: Trend towards lighter and sweeter

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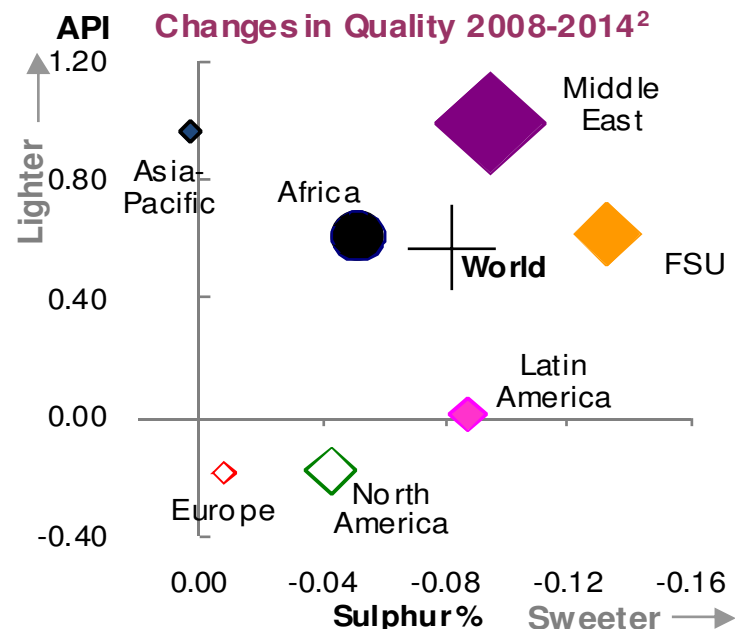
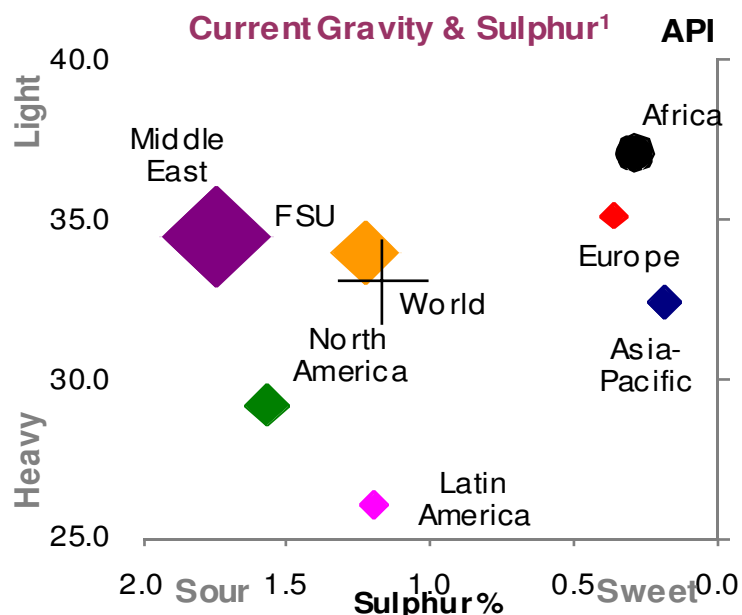
- Average crude quality projected to lighten from 33° to 33.6° API in 2008-2014
 - Sulphur content to fall from 1.16% to 1.06%
- => Strong impact of growing condensate volumes,



Crude quality: FSU, Africa and ME lighten up

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1 Symbols proportionate in size to regional production.

2 Hollow symbol denotes crude + condensate production in decline.

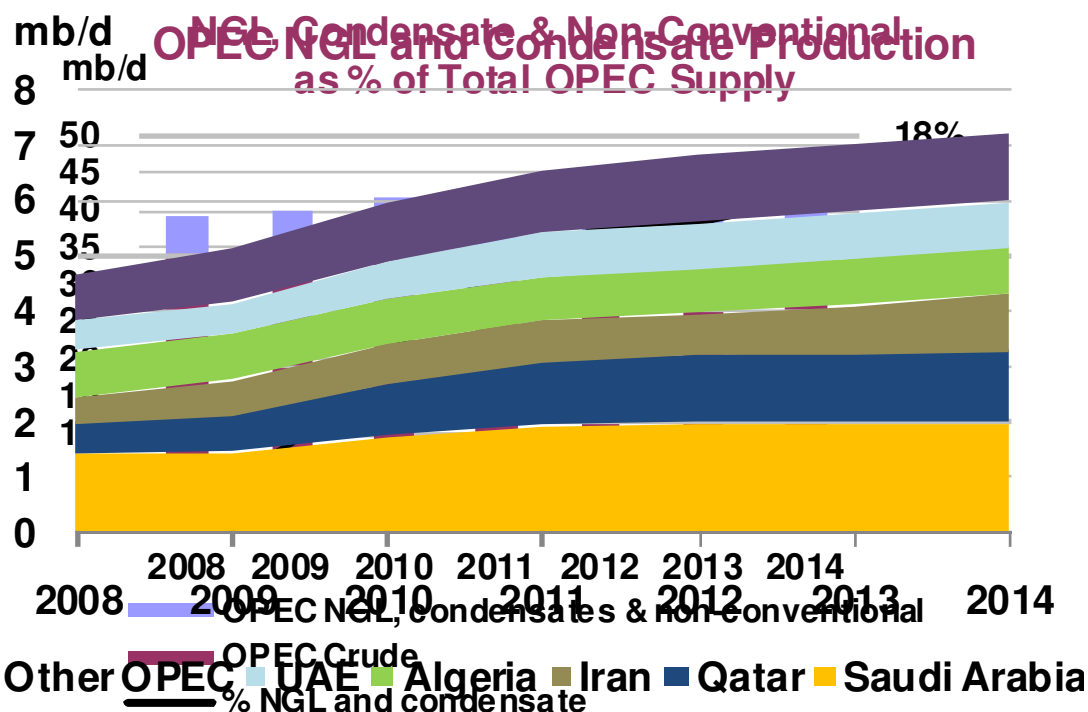
- **Lighter/sweeter crude projected for all regions 2008-2012; picture is more complex from 2012-2014**
- **Suggests that lighter supplies from FSU, Africa and Middle East drive the trend, partly offset by expected Canadian crude mix**



OPEC Condensate & NGL to Surge 60% from 2008-2014

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- 2.6 mb/d capacity increase, to 7.3mb/d, of which 90% is in the Middle East
- Middle East output of condensate and NGLs to more than double by 2014, to 5.5 mb/d
- Gas liquids rises to 17% of total OPEC supply by 2014 from 12% in 2008



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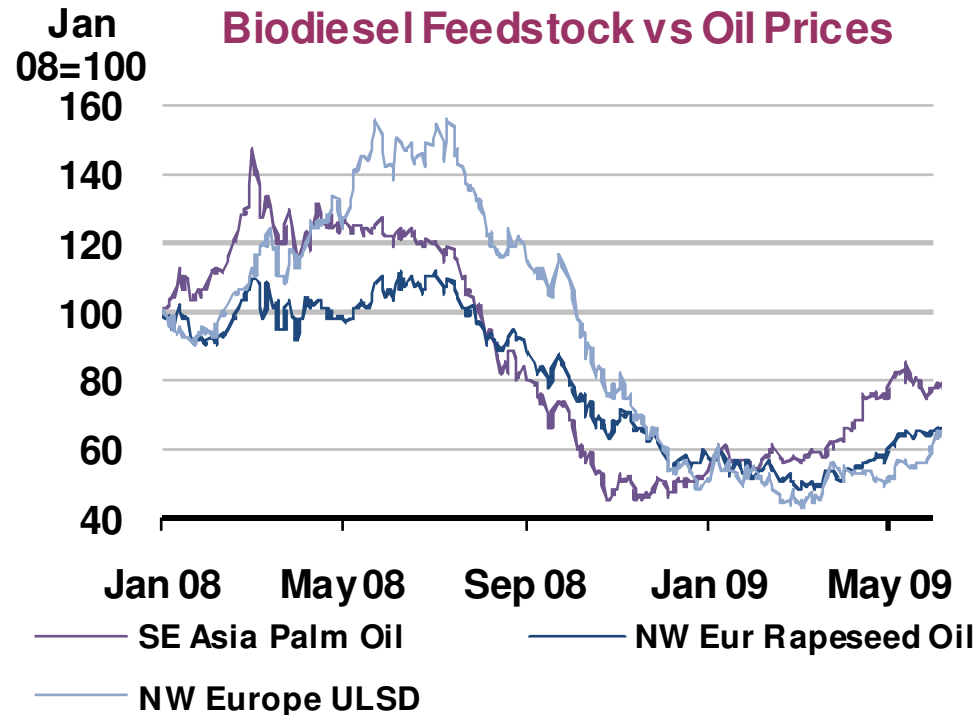
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Biofuels

Lower oil prices and higher feedstock costs hurt..

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- **Commodity prices have fallen since last summer...**
- **But oil prices fell more than agricultural feedstocks, undermining biofuels margins and competitiveness versus fossil fuels**
- **Yet, since May, agricultural prices have fallen relative to oil, improving near term biofuels economics**
- **Sugar prices, however, have skyrocketed, undermining sugar ethanol economics**

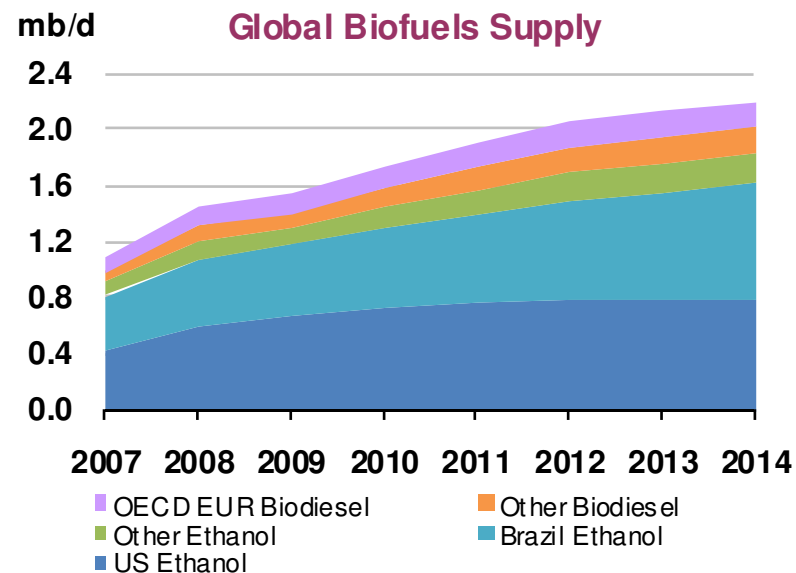
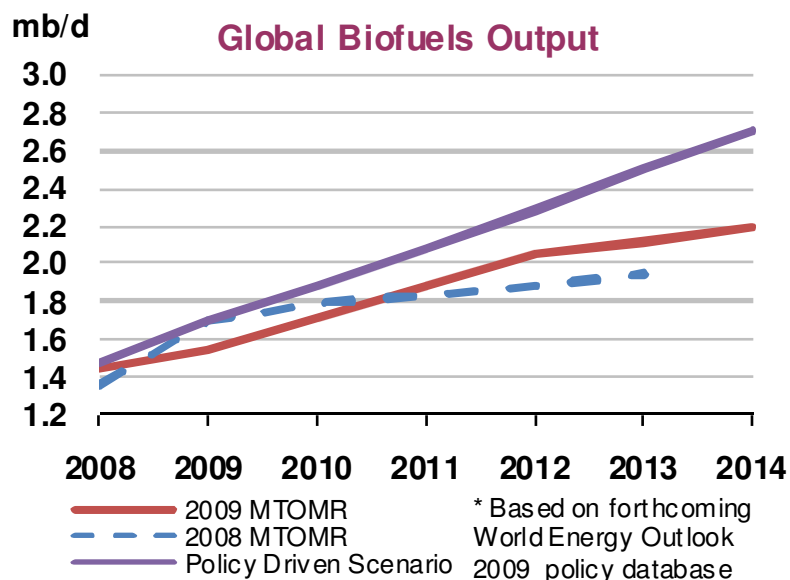


Yet, medium-term production forecast remains robust

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- **Despite near-term industry hardships, we still expect strong biofuels supply growth through 2014**
 - **Biofuels production can respond quickly to changing market conditions**
 - **Industry consolidation suggests transition to more economically sustainable production**
 - **Low cost producers such as Brazil should continue expanding strongly**
 - **And blending mandates provide a floor for growth**

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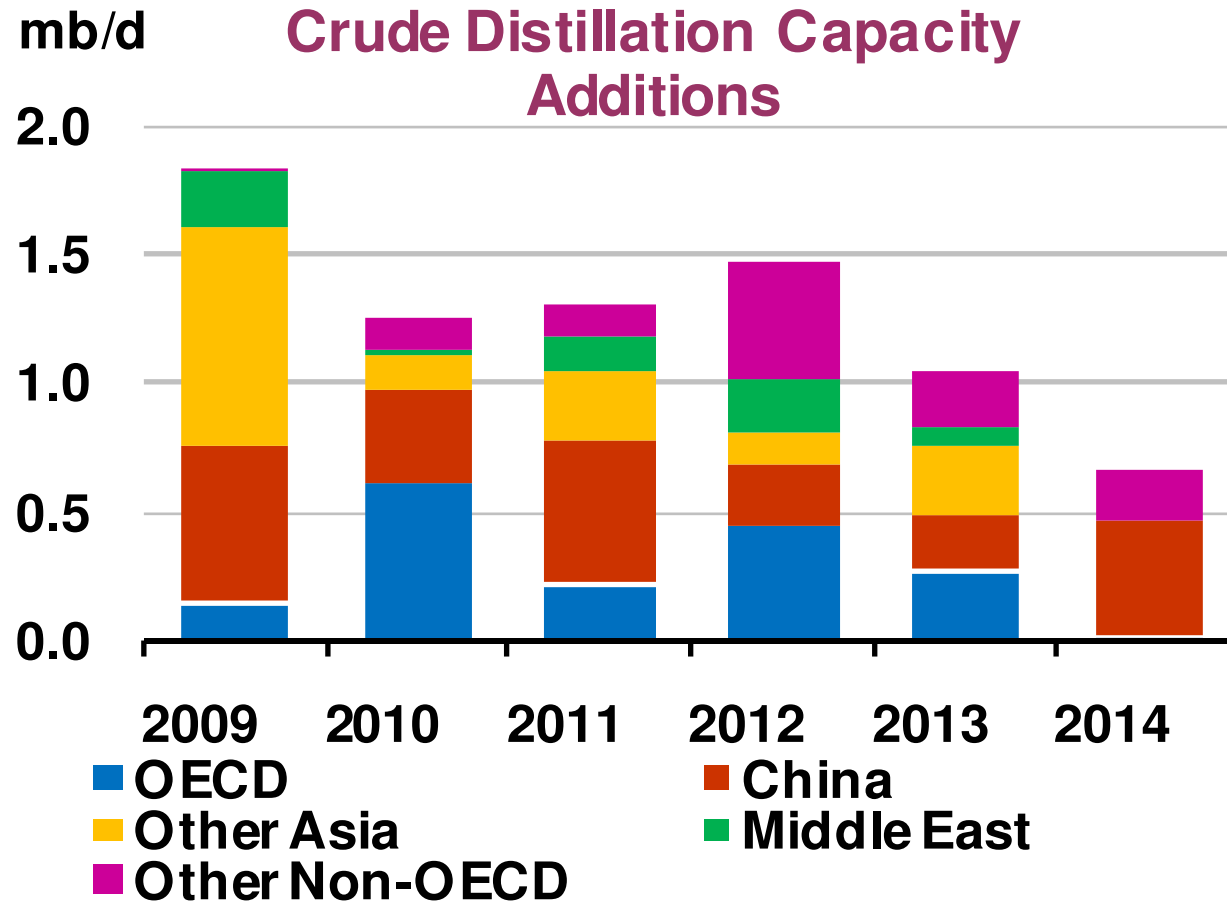
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Refining & Product Supply

Capacity additions +7.6mb/d

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- 7.6mb/d of crude distillation capacity to be added for the 2008-2014 period.
- Growth outstrips demand increase, presents problem for future utilisation rates.



Capacity growth is in Asia

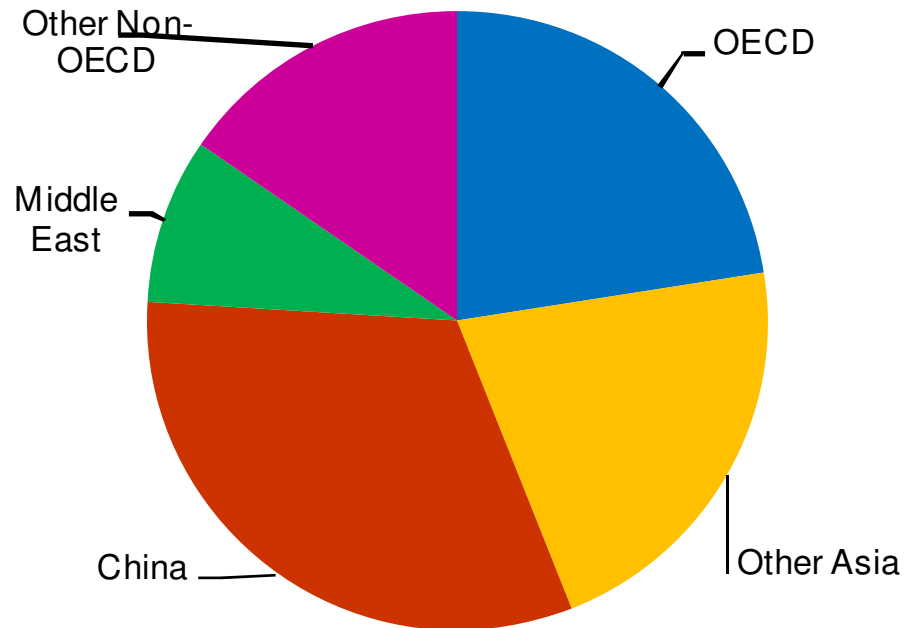
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Crude Distillation Capacity Additions

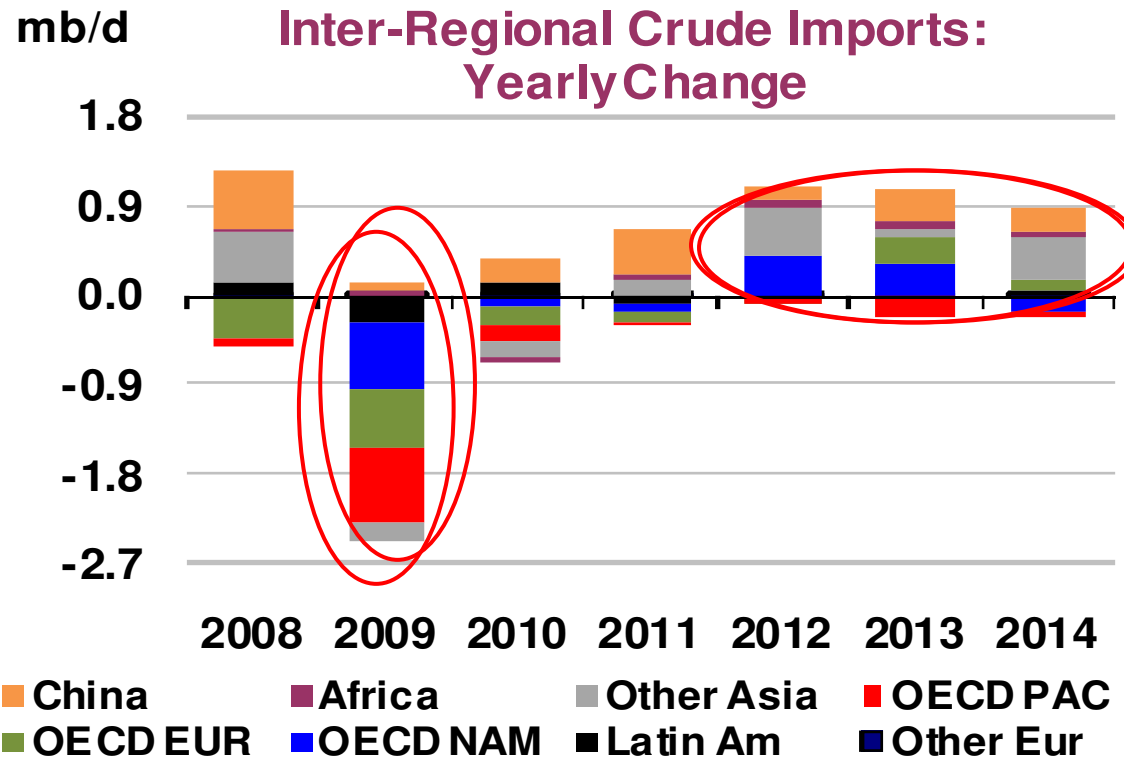


- Increase dominated by Asia - more than 50% - with China accounting for nearly a third of the total.
- The OECD accounts for a further 20% - mainly North America, albeit more slowly
- The Middle East sees its share drop below 10%, as several projects appear to have slipped beyond 2014

Global crude trade

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- Middle East provides swing supply leadership role. Exports cut heavily in 2009, recovery 2012-2014
- Import collapse in OECD regions during 2009 but subsequent growth driven by Other Asia and China



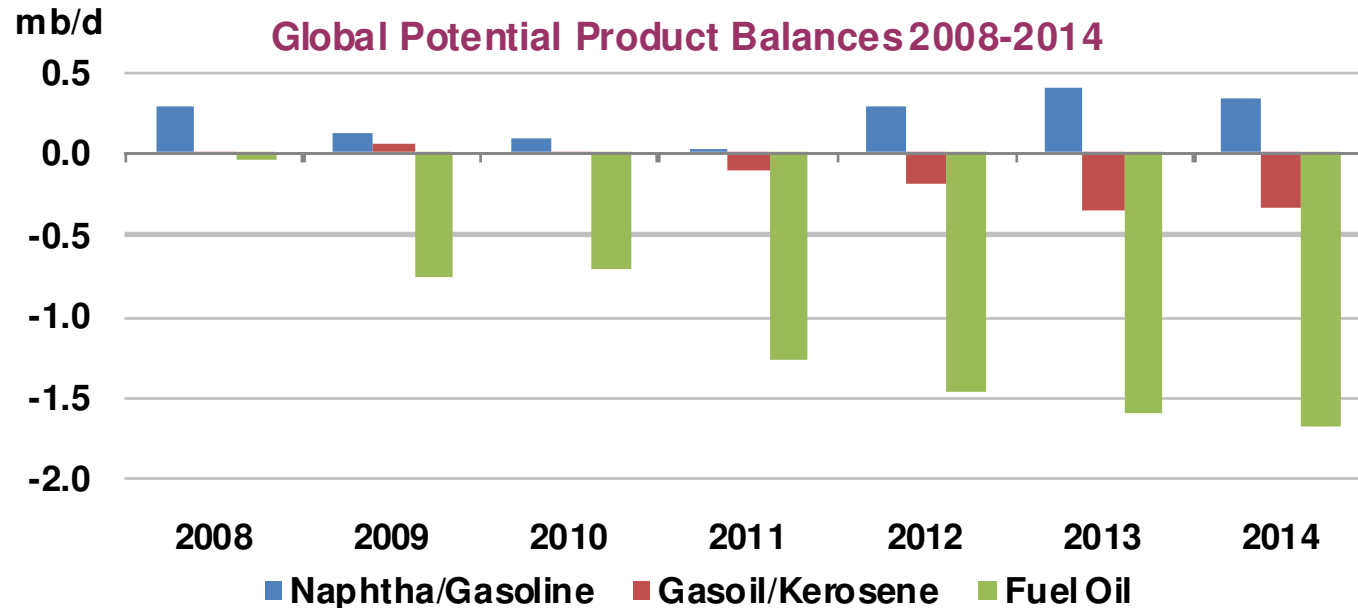
Refined product balances

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- Fuel oil projection shows significant (and likely infeasible) tightening ahead
- Naphtha/gasoline – surplus expected to re-emerge post 2011
- Middle distillate tightness set to re-emerge post 2010, as strong demand growth outpaces refinery capacity additions

Global light distillate balance

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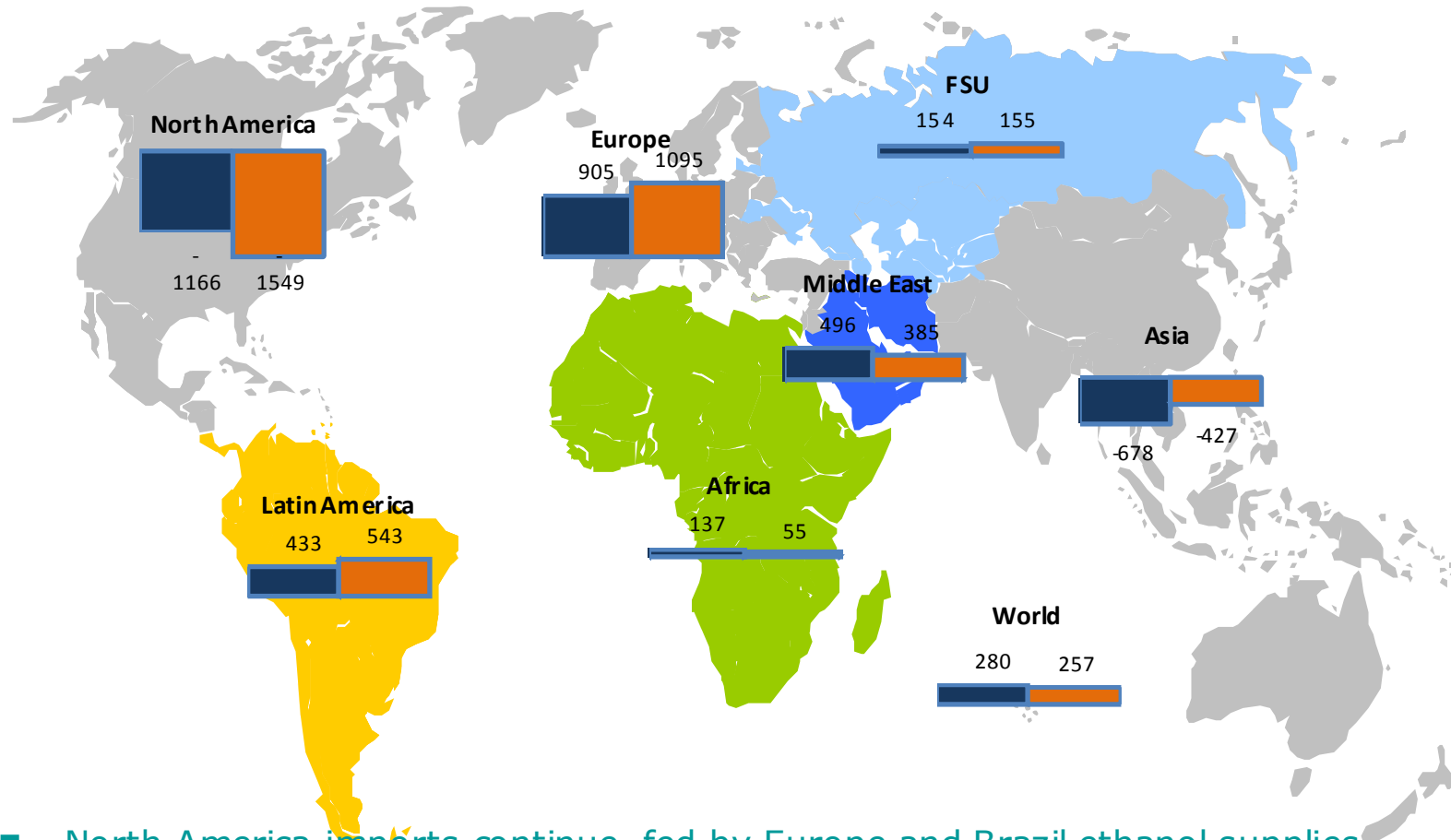


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Product Supply Balances- Gasoline/Naphtha

Potential Evolution in Regional Balance 2008/2014

Thousand barrels per day



- North America imports continue, fed by Europe and Brazil ethanol supplies
- European exports up, despite lower regional runs, as demand erosion continues
- Middle East continues naphtha exports, but gasoline demand/imports will cut surplus

Global middle distillate balance

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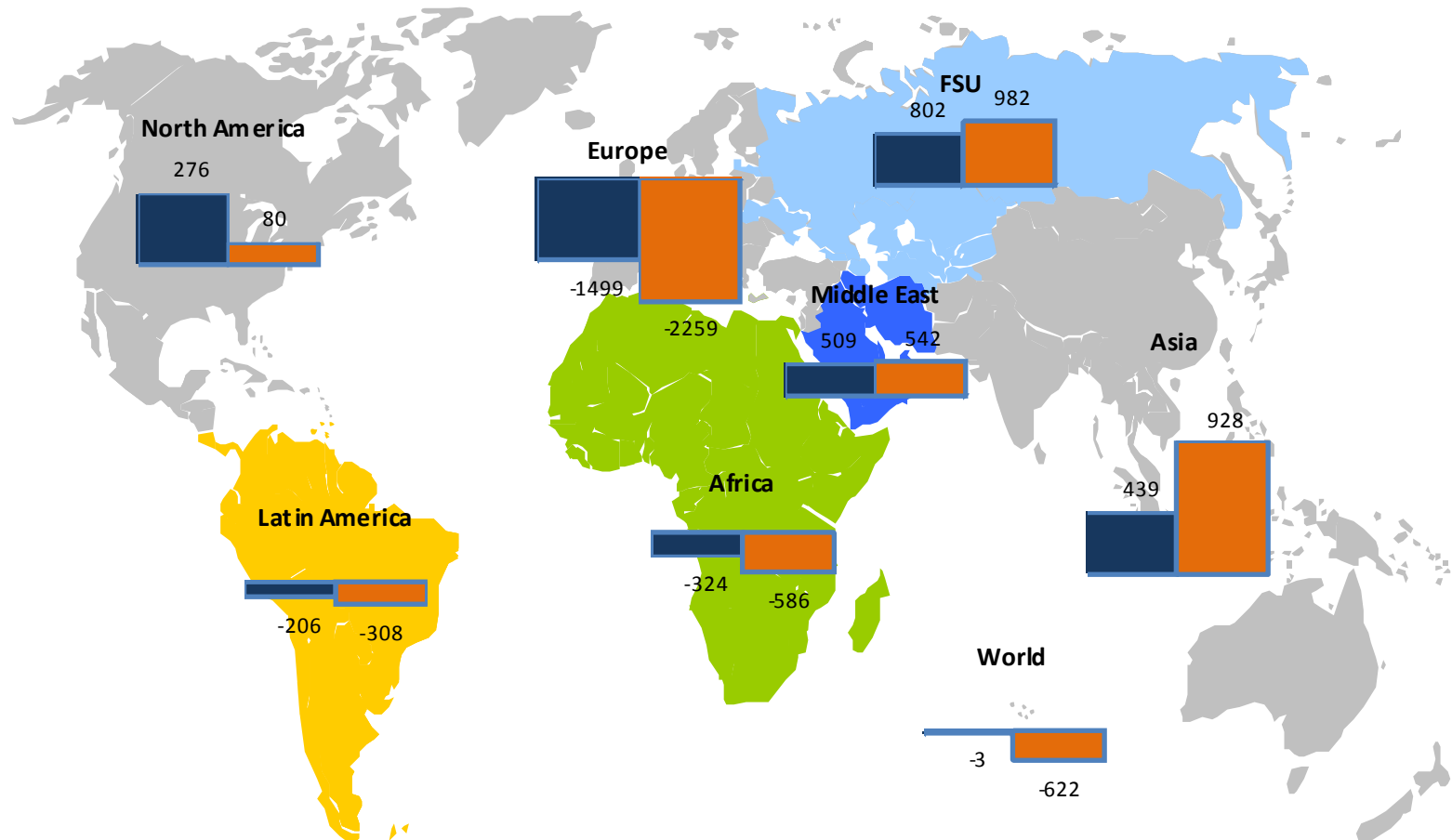


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Product Supply Balances- Gasoil/Kerosene

Potential Evolution in Regional Balance 2008/2014

Thousand barrels per day



- Middle distillate tightness increases over 2011-14 after 2009 overhang clears
- Lower crude runs in Europe increase imports by 50%
- Collapse in OCED Pacific demand for kerosene boosts Asian regional surplus

Global fuel oil balance

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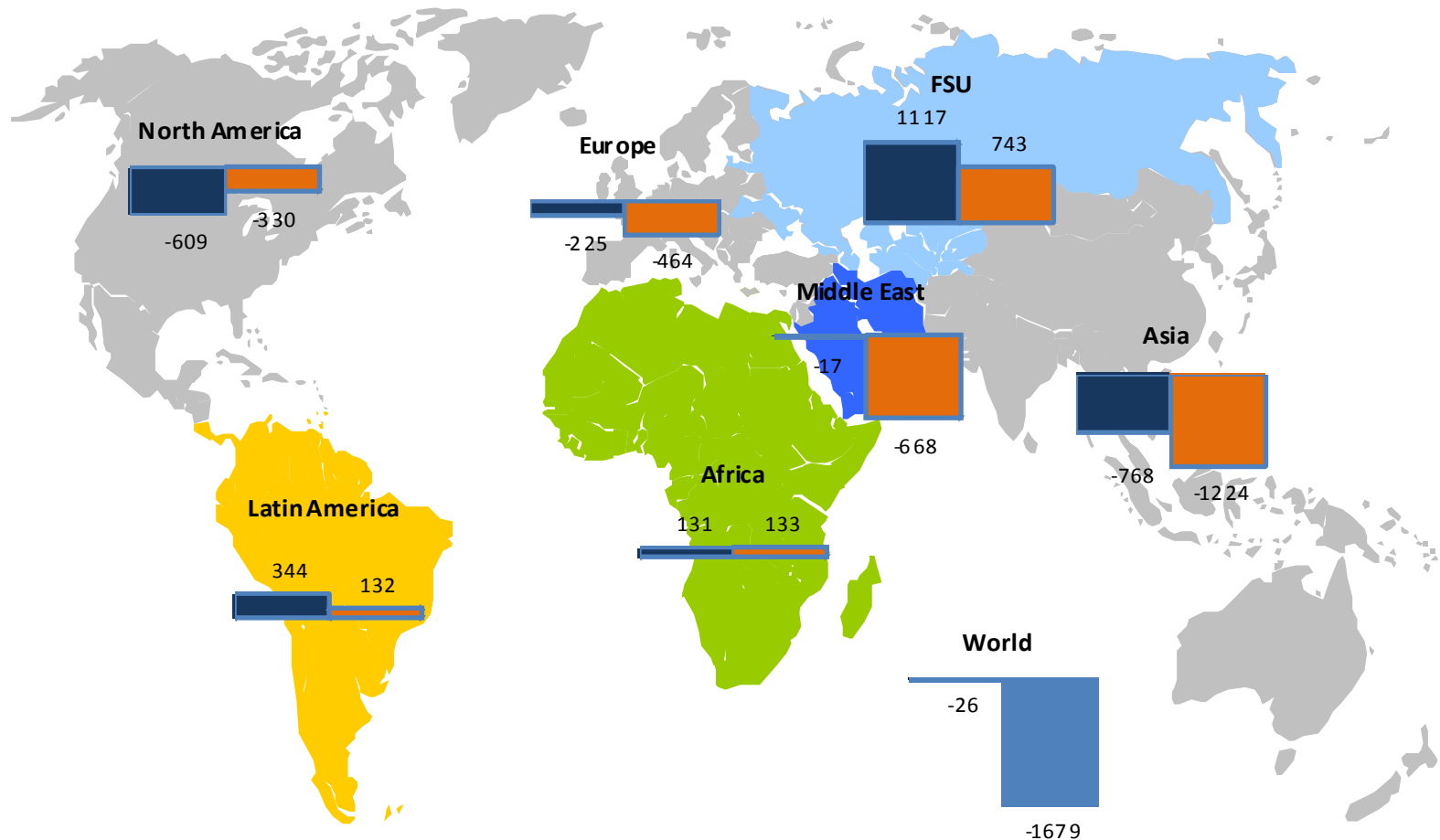


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Product Supply Balances- Fuel Oil

Potential Evolution in Regional Balance 2008/2014

Thousand barrels per day

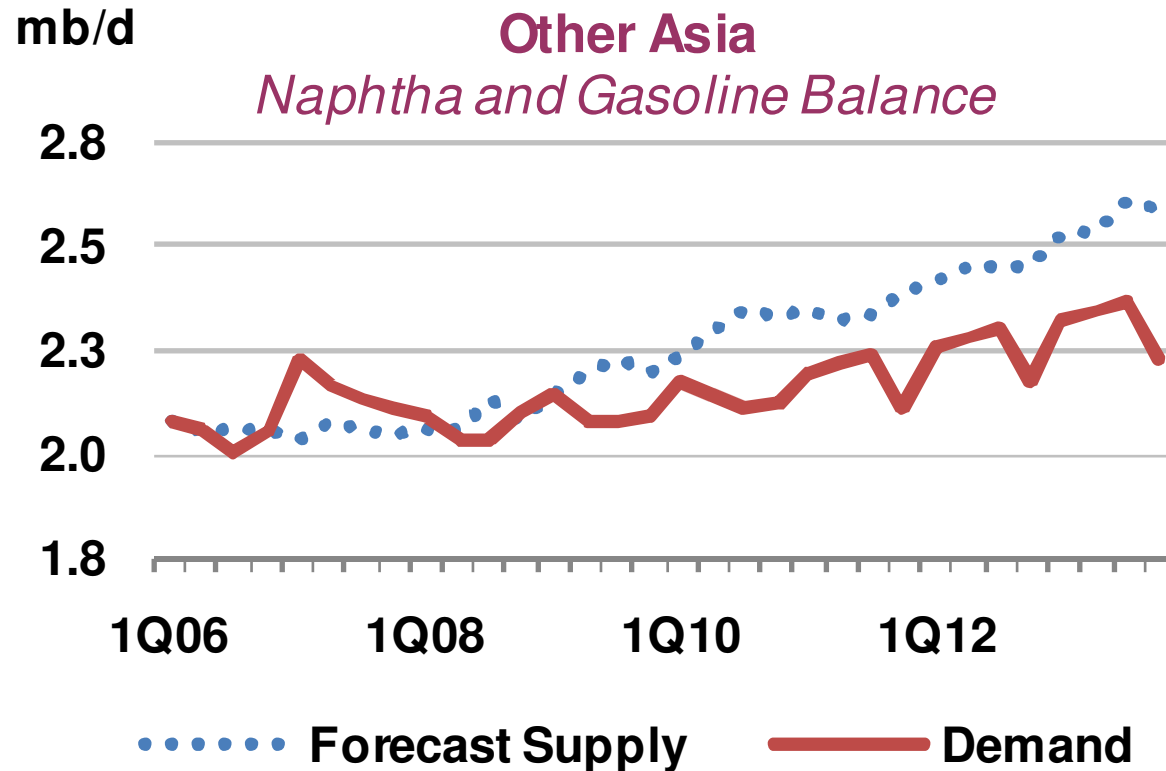


- Fuel oil markets are set to tighten significantly (unfeasibly)
- Better quality crude and upgrading capacity additions drive much of the change
- Upgrading spreads will remain under pressure for much of 2008-14

Other Asia light distillate balance

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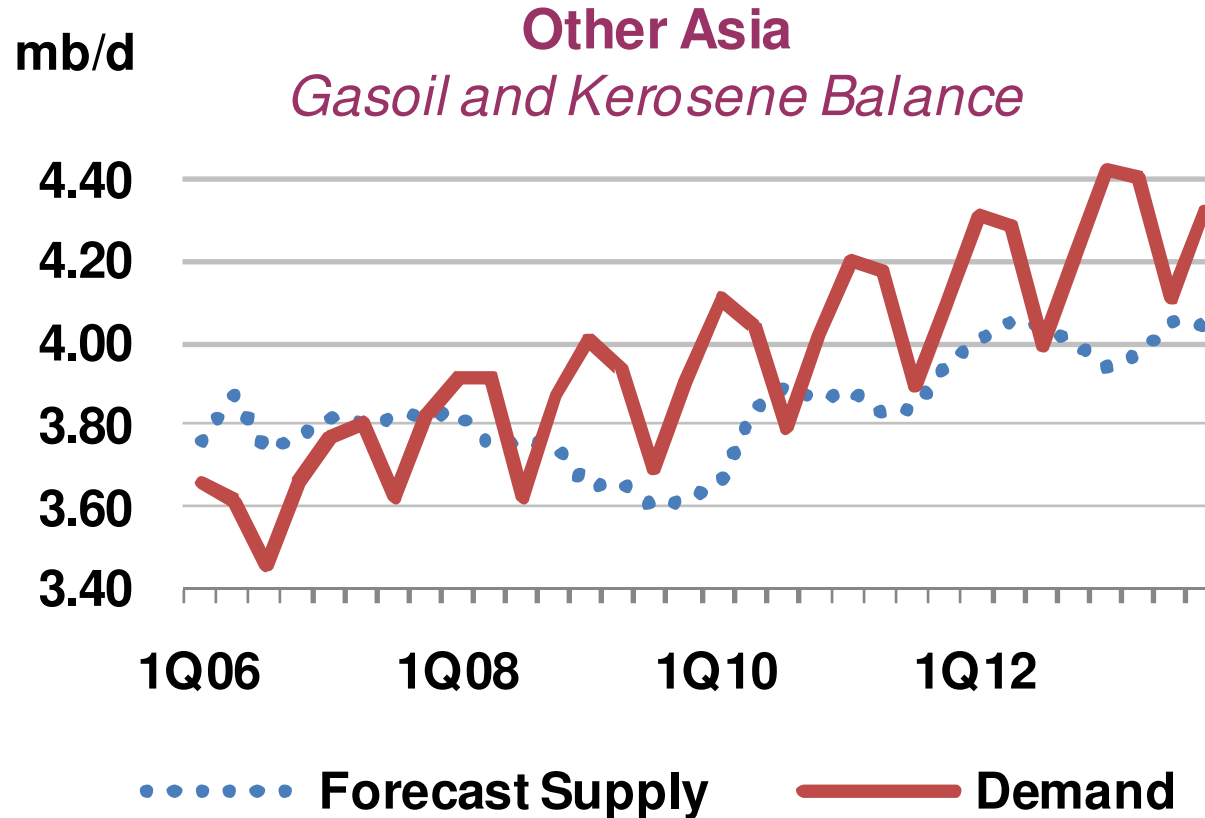
- Rise of export refining capacity in India etc. will boost gasoline exports.
- Assumption of rising NGL/condensate volumes processed in the region also contribute



Other Asia middle distillate balance

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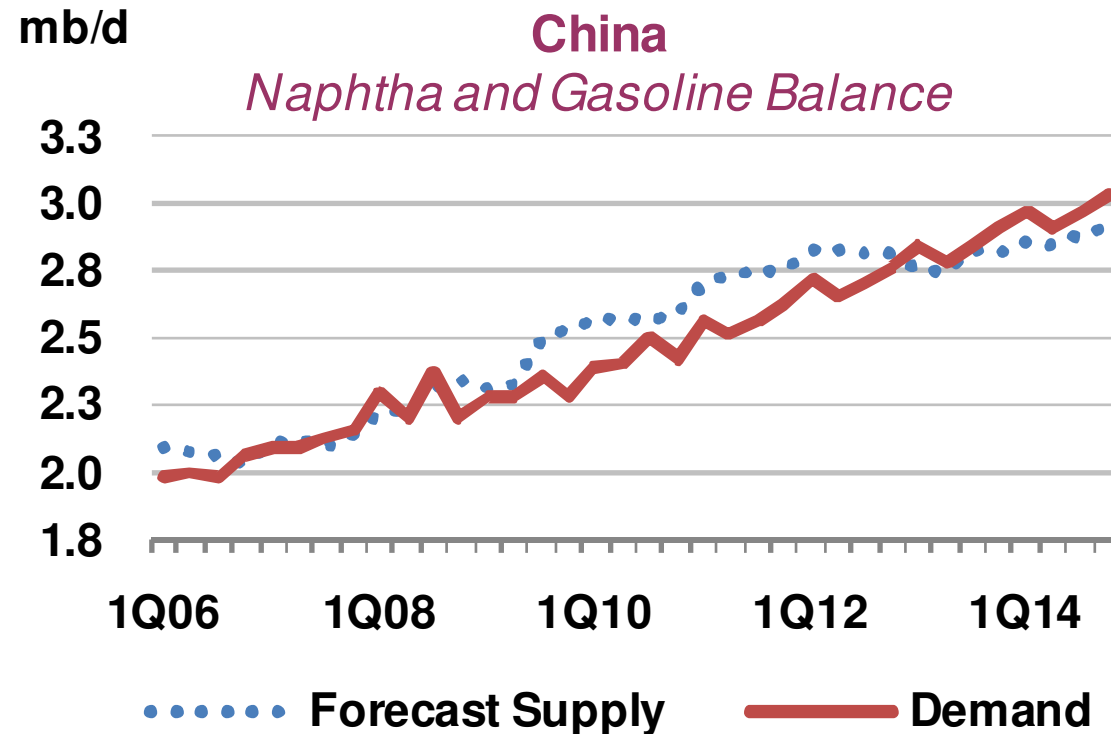
- Temporary lull in demand growth moves the region towards a more balanced position
- The recovery in the economic growth propel growth once more post 2010, with rising imports thereafter



China – rising gasoline exports

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- Rising gasoline exports are almost matched by continued need for naphtha imports
- Longer-term resurgent demand will force China to become a net importer of gasoline/naphtha



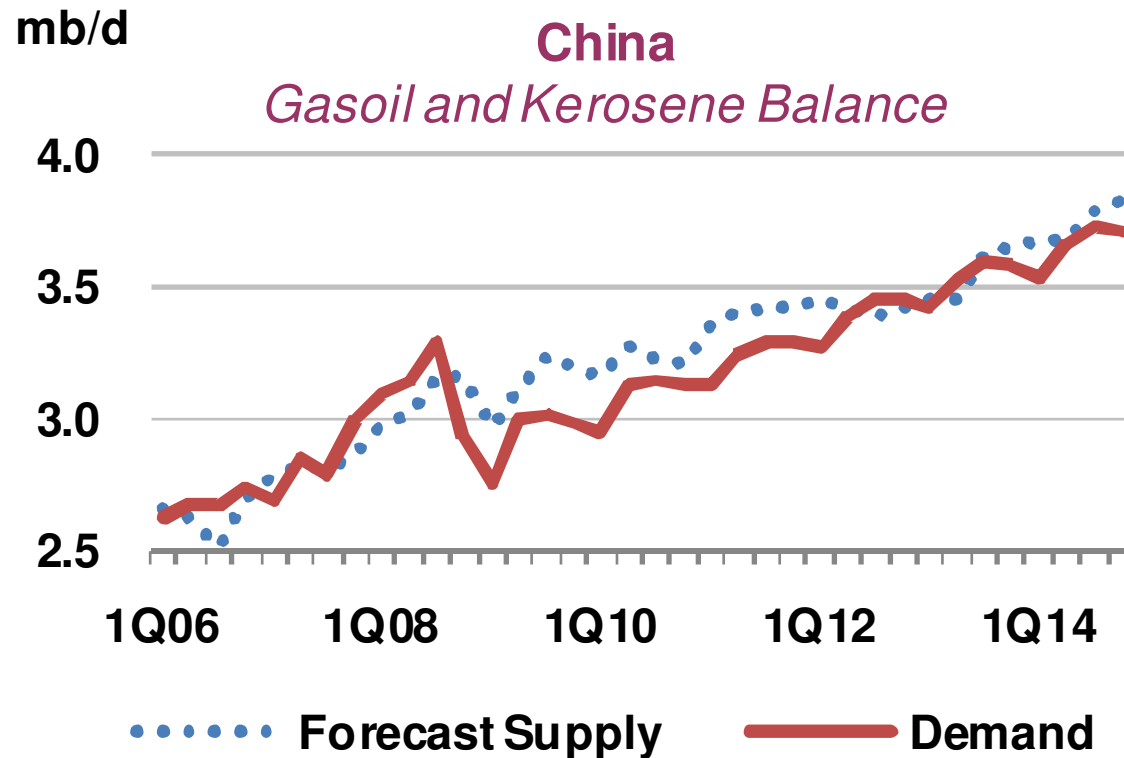
China middle distillate exports?

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- The drop in Chinese demand post the global economic slowdown forces a resumption of exports of gasoil.
- Planned refinery additions will perpetuate this until 2012.

Conclusions

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- **Refining industry faces several challenges:**
 - Globally there is likely to be a persistent overhang of spare capacity as projected distillation additions are greater than projected demand growth
 - Demand growth is centred on Asia and the Middle East, falling OECD demand will put pressure on OECD refineries
 - Tighter fuel oil markets will support fuel oil cracks and put pressure on upgrading margins, the source of refinery profitability

- **Rising NGL volumes will likely result in fierce competition for petrochemical feedstock market share.**
 - This may result in the emergence of oversupply in naphtha/gasoline markets

- **Tighter environmental regulations ahead:**
 - Will necessitate high levels of capital expenditure at a time when cash flow is under pressure.
 - Could result in accelerated capacity rationalisation in OECD regions

Thank You

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Q & A