



South East Med: Are Further Refining Investments Reasonable?

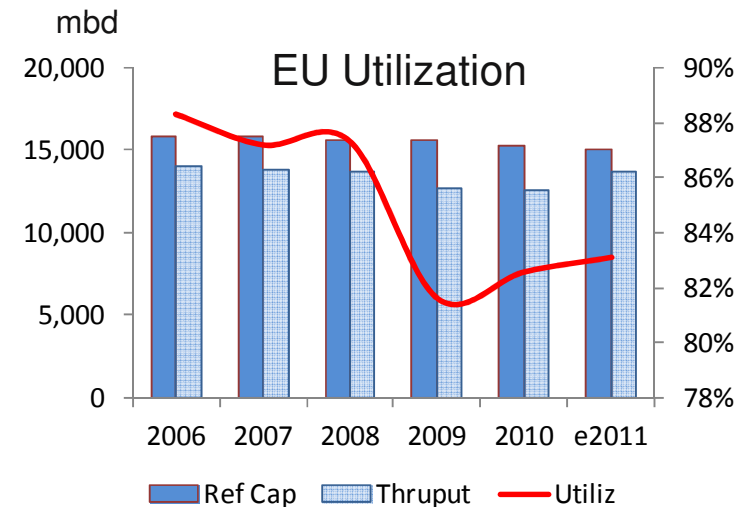
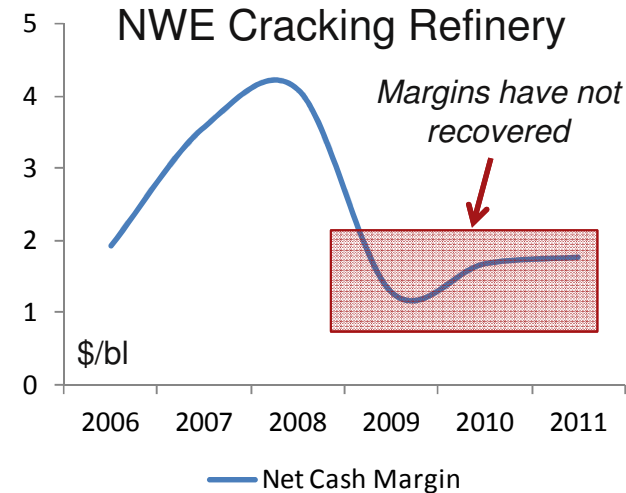
Marc Seris, Senior Director

European Refining: Why Is It So Bad?

- European demand collapse
 - Demand has fallen by over 1 mbd since 2006

- US WTI messup
 - US production has been upheld by low crude pricing in MidWest

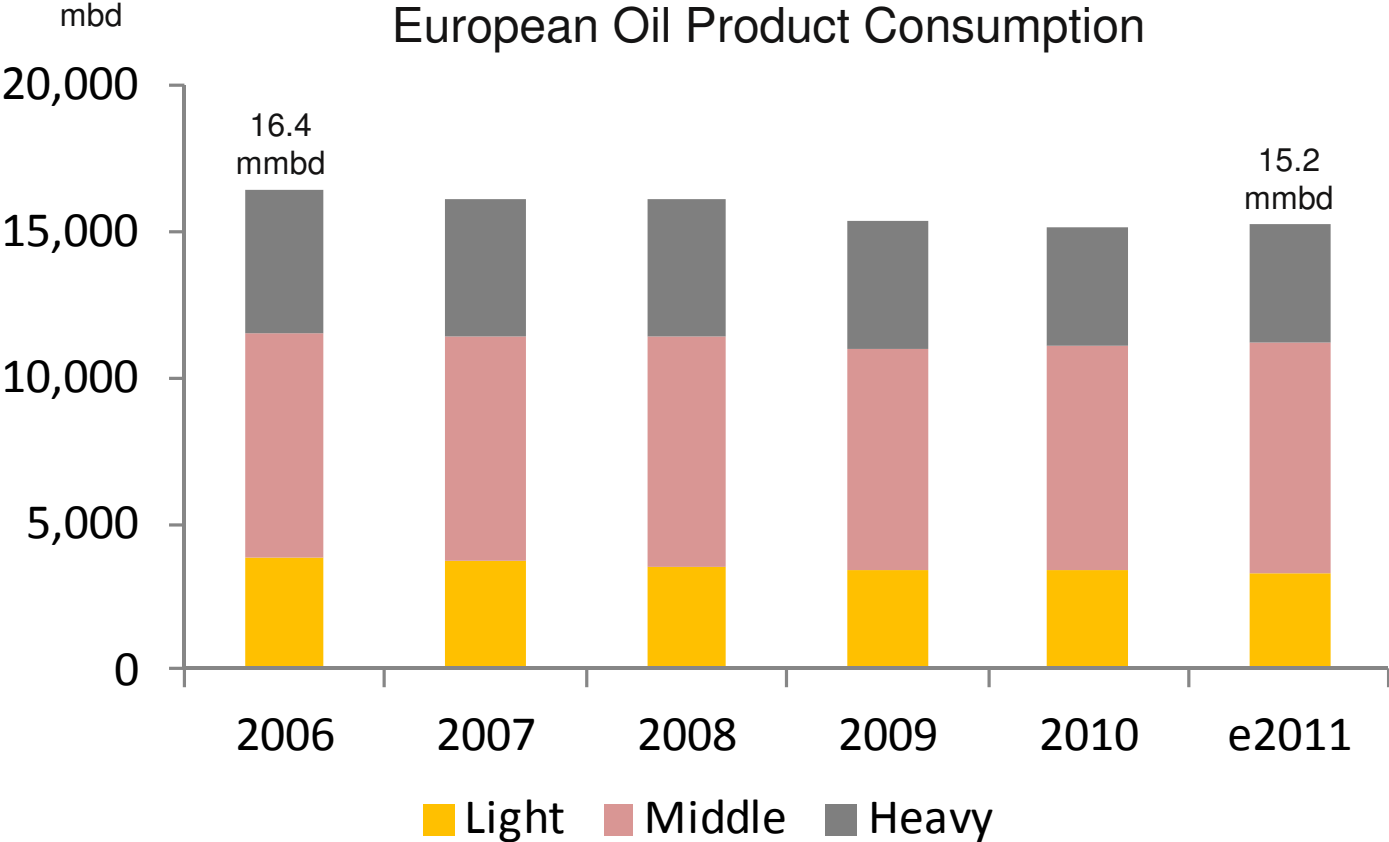
- Russian export surge
 - Russia has seen continued rise in gasoil and HFO exports throughout the crisis



Europe is hardest hit

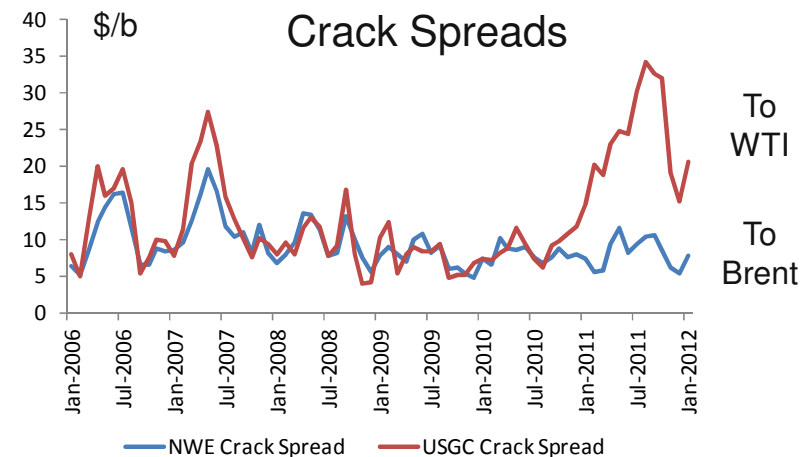
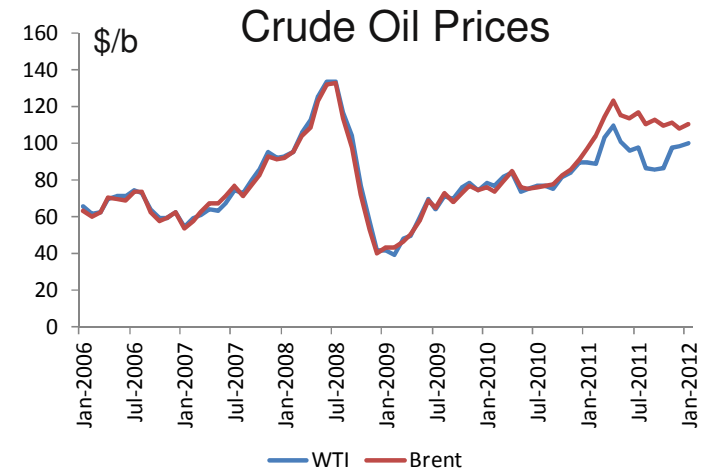
No significant recovery yet in sight

European Demand Has Lost 1.2 mmb/d Since 2006



US Inland Light-Sweet Discounts Driving US Refining

- US inland crude logistics are bottlenecked...
- ...leading to a dramatic surge in WTI discounts to Brent
- US light-sweet discount is key driver behind US mid-continental refining margins...
- ...leading to substantial refining earnings for US exposed IOCs

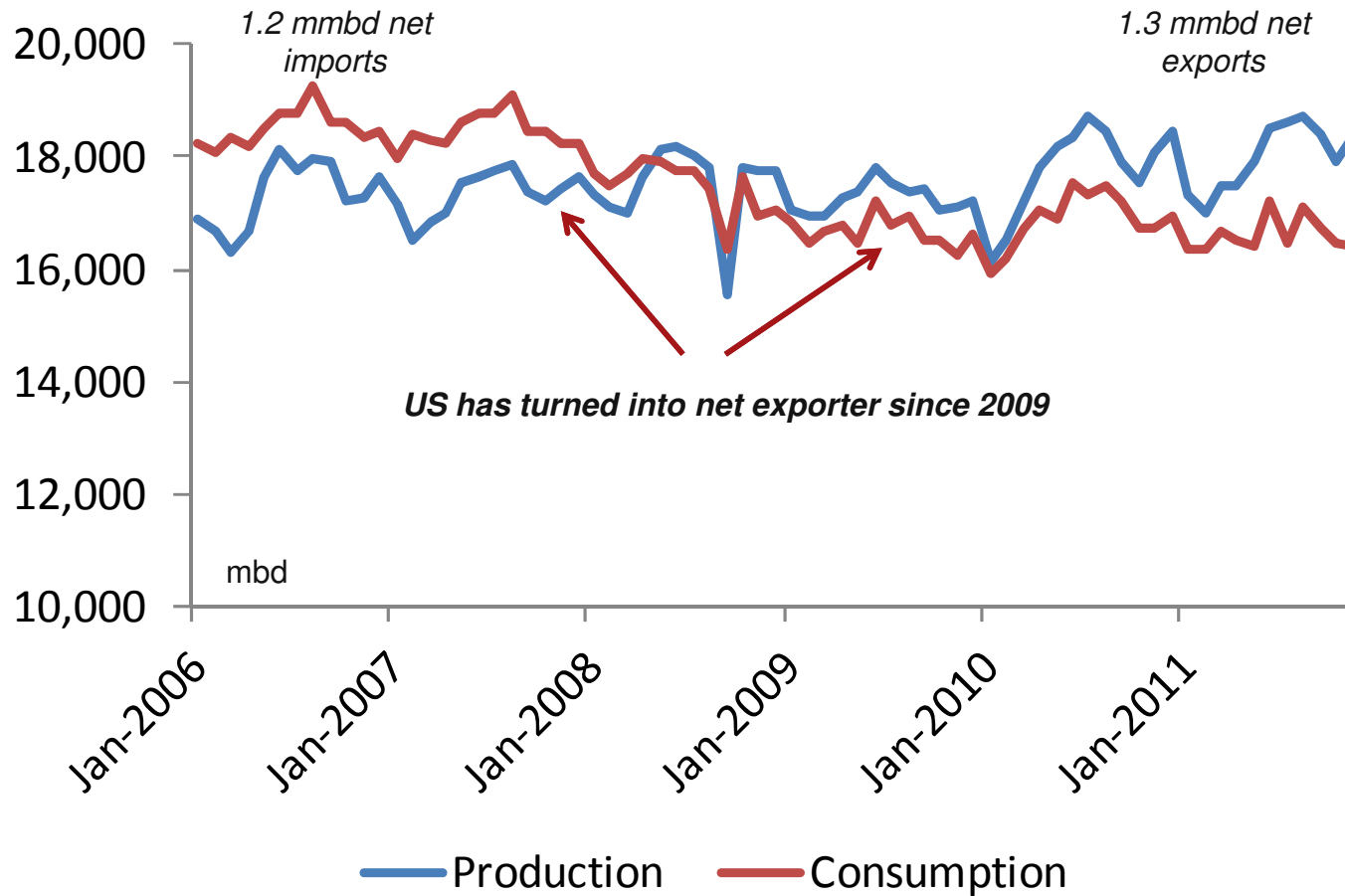


Logistical Bottleneck Likely to Last

WTI Discount Drives Crack Spreads

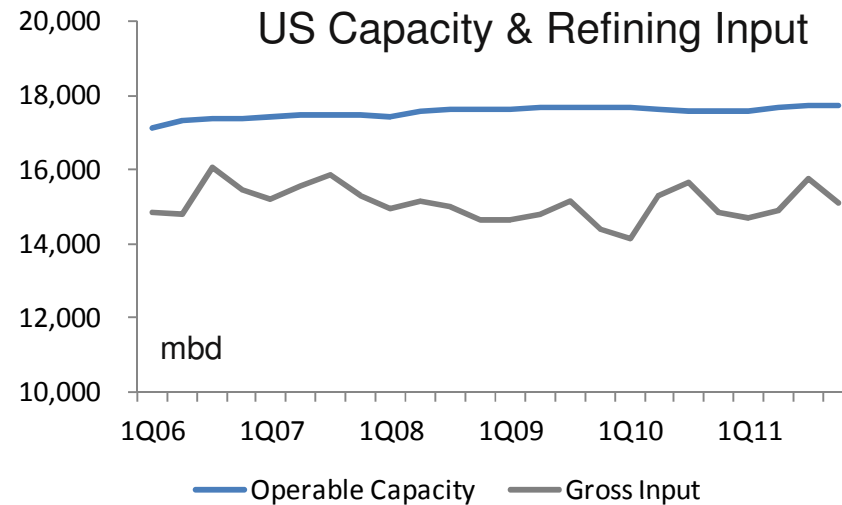
US Flips from Importer to Exporter...

US Finished Product Production & Consumption

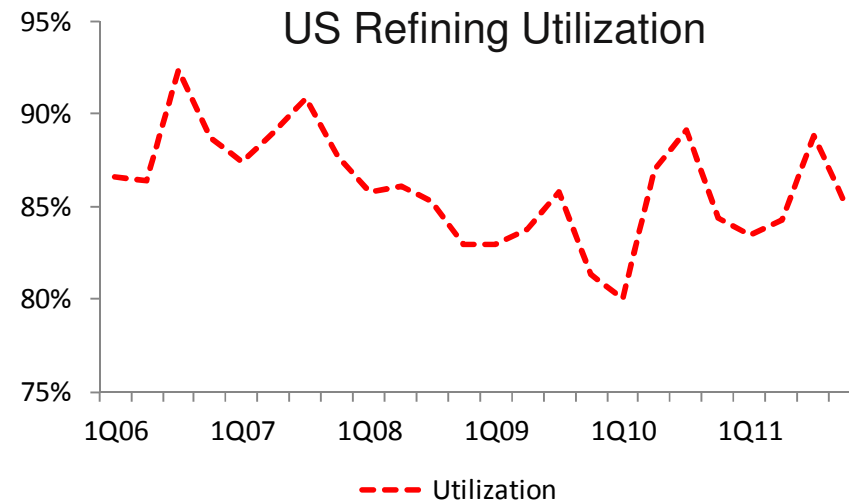


...and US Utilization Partly Recovers

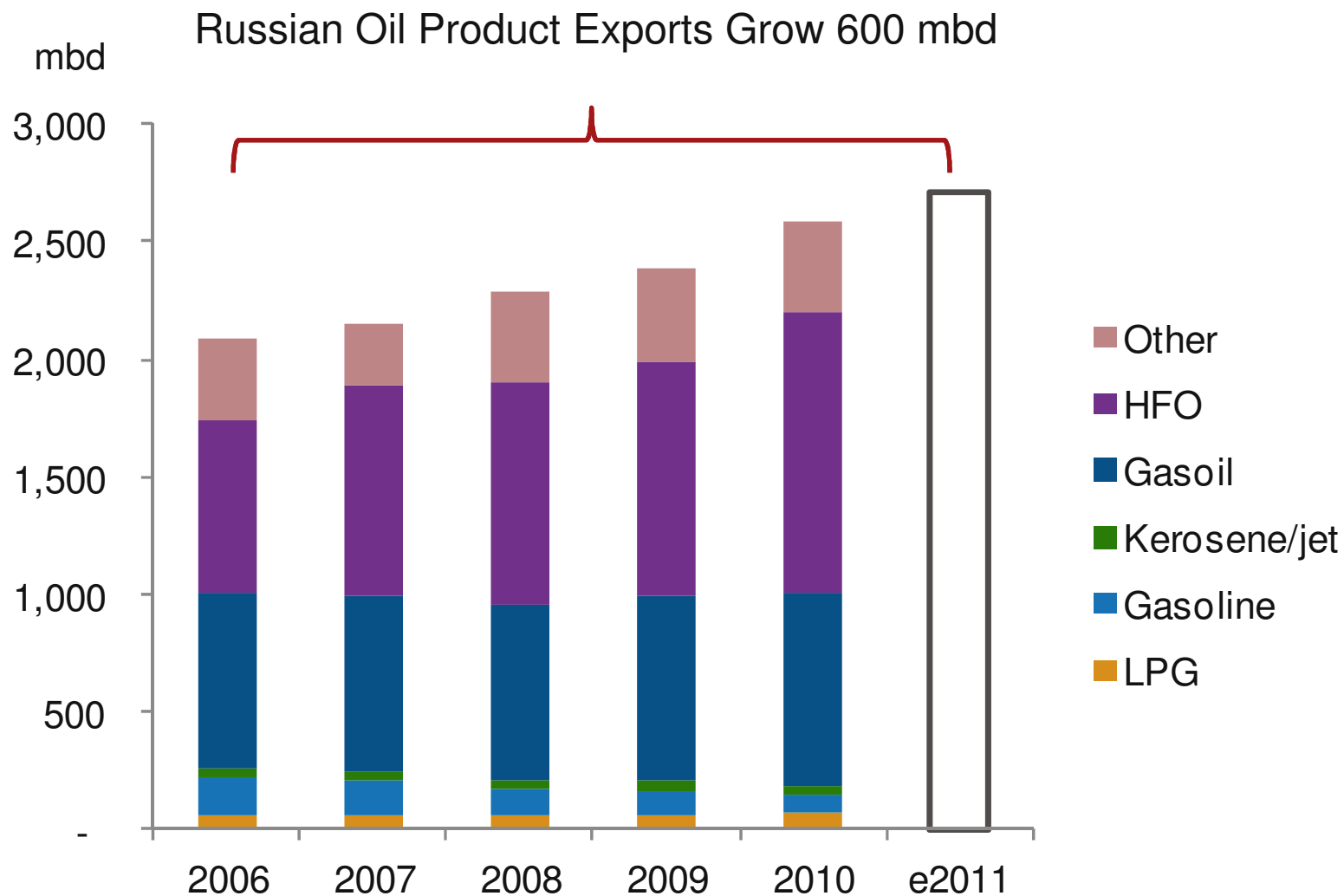
- US operable capacity has continued to increase
 - In spite of shutdowns in wake of 2009 crisis



- Utilization rates have partly recovered
 - Supported by MidWest strong margins and refinery runs



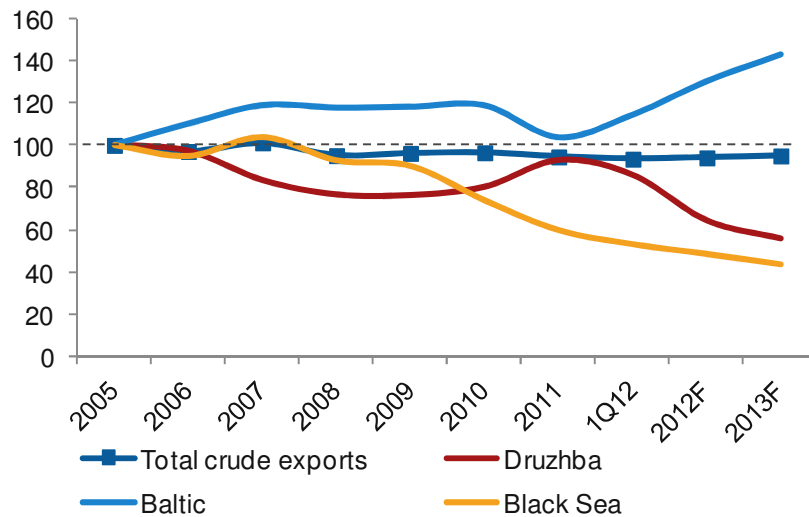
Russian Product Exports Growth Puts Pressure on Refiners



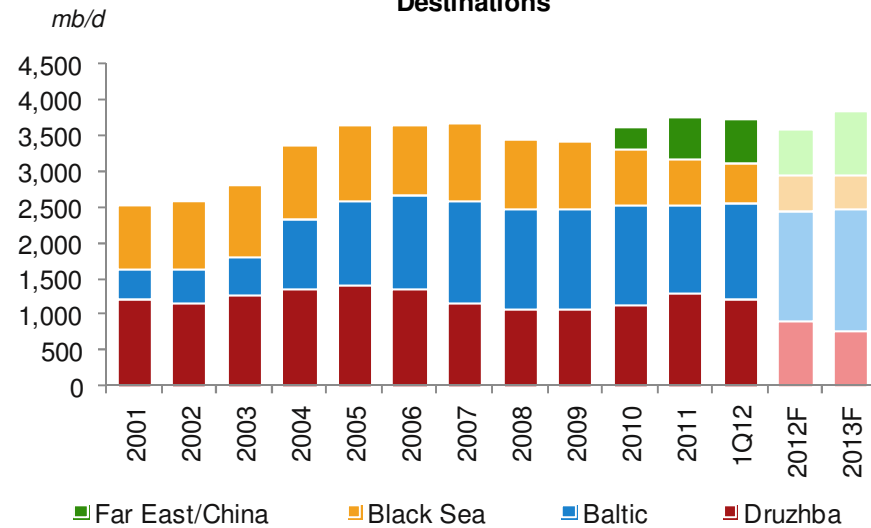
Source: Downstream Markets Service FSU

New Crude Outlets in Baltic and Far East Adds Export Options Outside of Black Sea-Med & Druzhba

Russian Crude Exports by Major Outlet Indexed from 2005

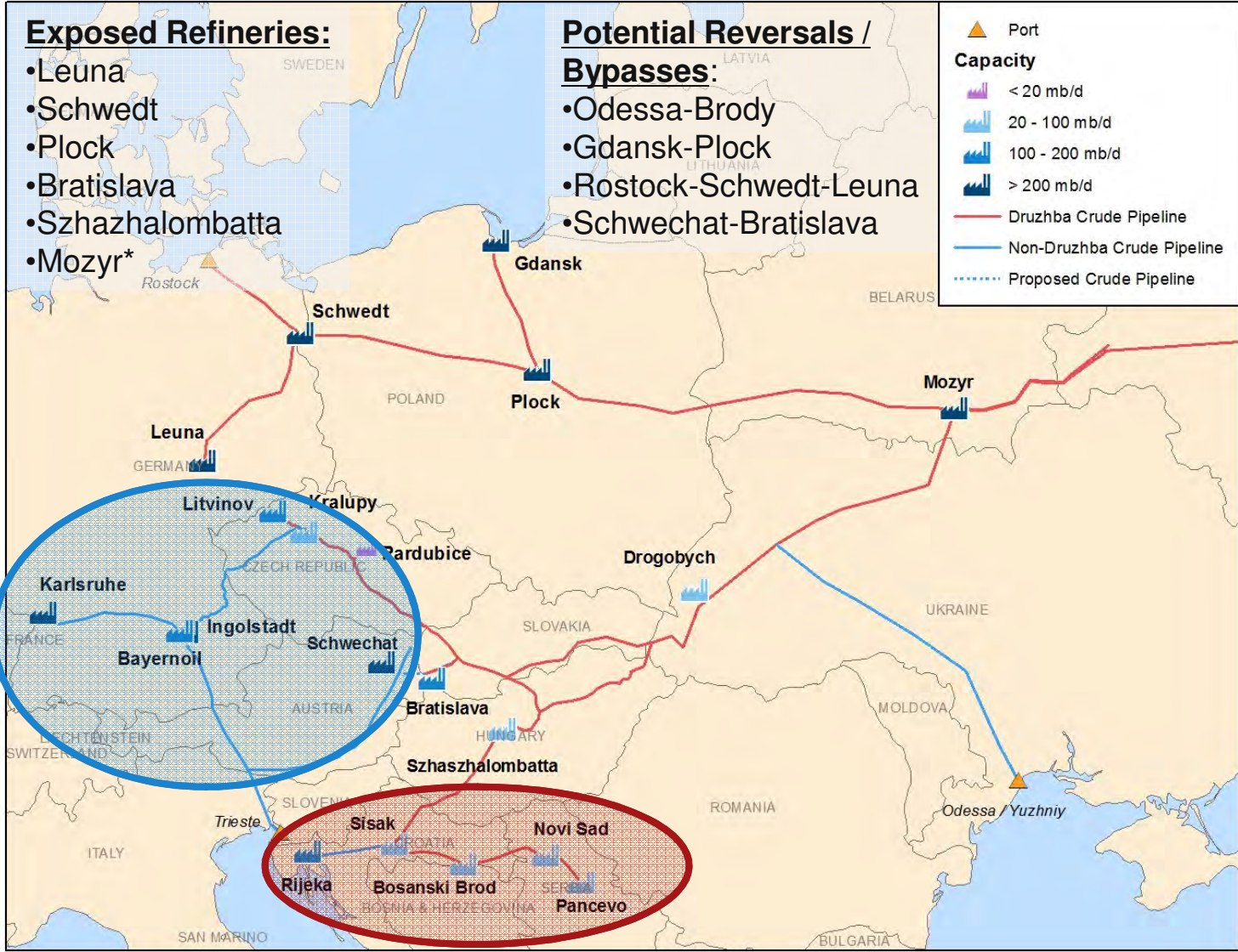


Crude Pipeline Exports by Russia to Non-CIS Destinations

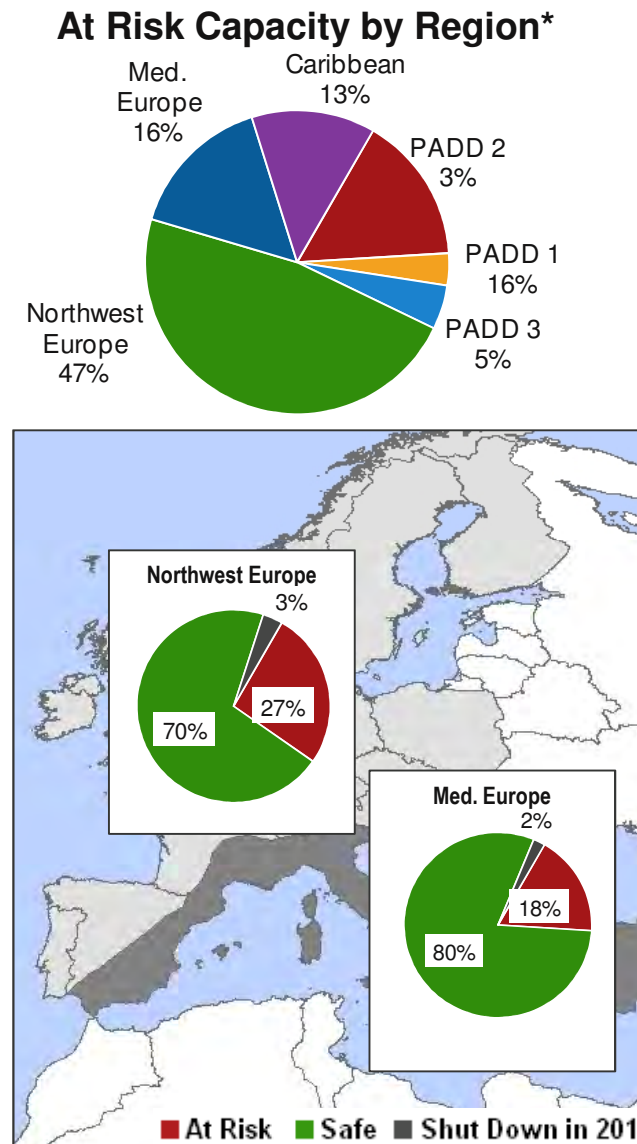
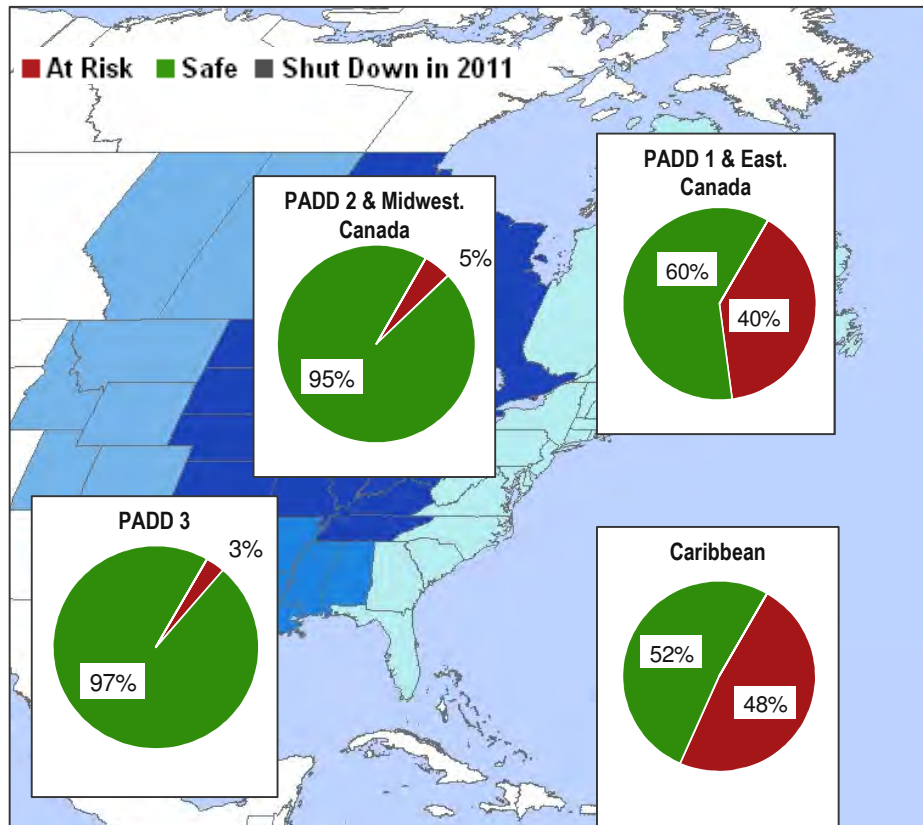


Trends and strategic priorities suggest Baltic and Far East gains will be off-set by declines in Druzhba and Black Sea exports

Druzhba Refineries Under Pressure as Traditional Discount Evaporates; Secondary Supply to be Key



Significant Refinery Rationalization in the Atlantic Basin Expected



- Roughly 2/3 of the at risk capacity is located in Europe
- This outlook is through 2016

Note: All numbers exclude refineries < 40 mb/d
 Downstream Eastern Med Challenges | © PFC Energy | Page 10

How Much Relief Can We Expect For European Refining?

- European demand is expected to continue to decline
 - 1% per year on average in benign scenario
 - Euro break-up could be « nightmare » scenario
- US situation unlikely to normalize quickly
 - Surge in shale oil will entrench US Light Sweet discounts
- Russian exports will eventually reverse (after 2015)
 - Mooted change in 2015 to HFO export tax could lead to reduced capacity and throughputs...
 - ...but unlikely to affect distillate exports too much
 - And Russian crude exports to Med likely to decline

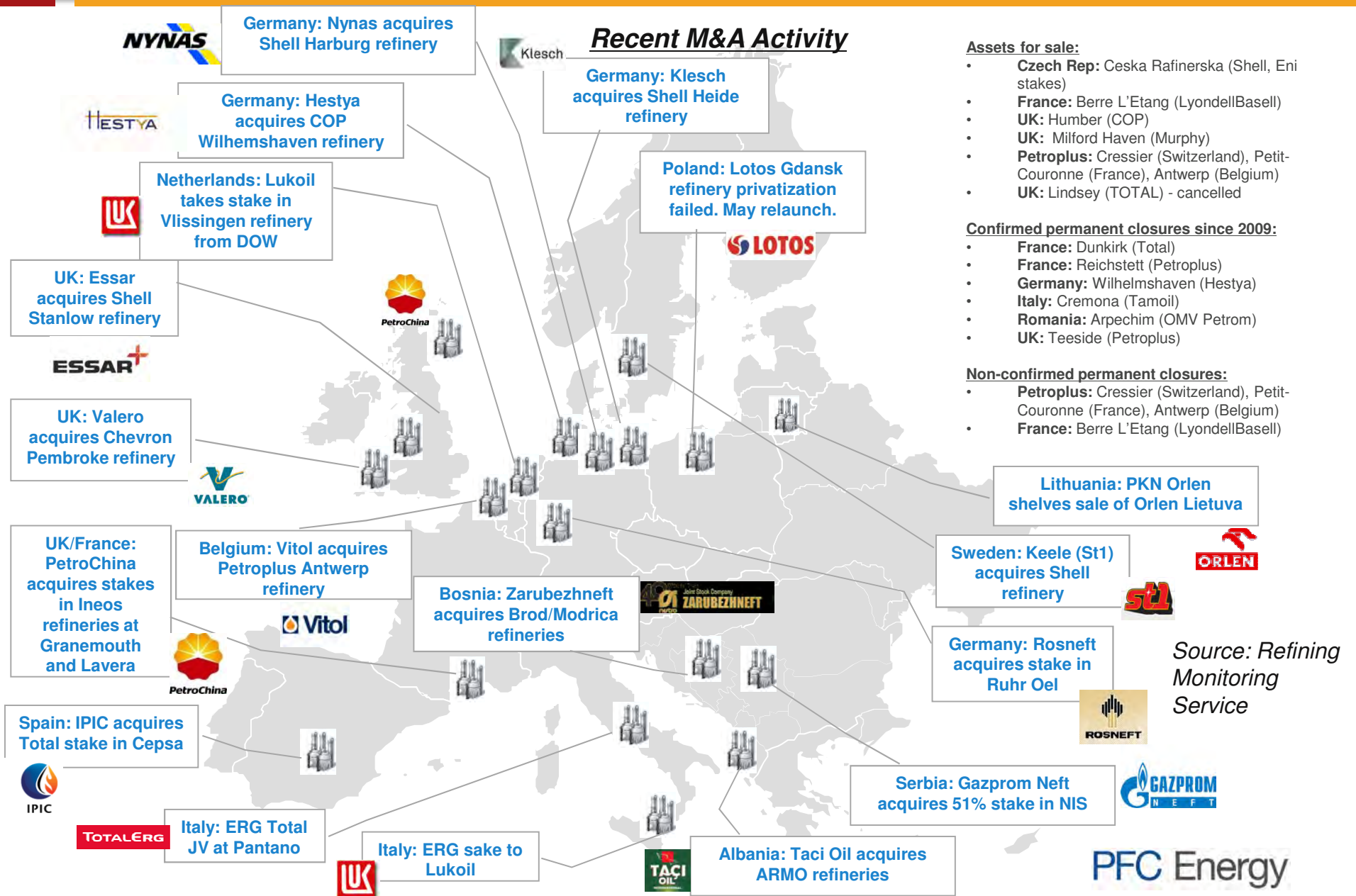
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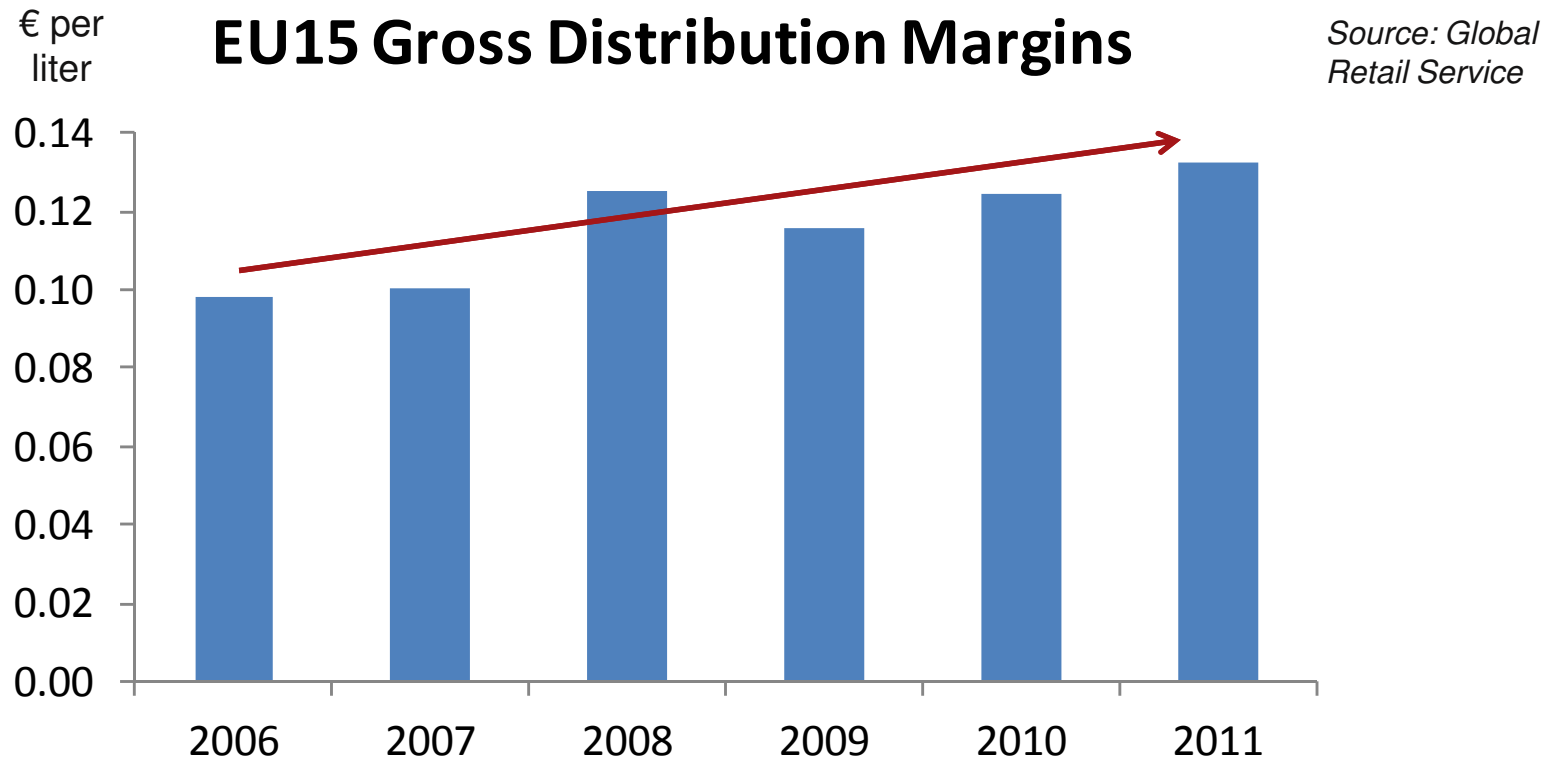
Not
before
2015

In short to medium run, main relief will come from refinery closures

Radical Change in European Refining Competitive Landscape Will Therefore Continue In The Medium Term



But Retail & Marketing Margins Hold Up in Europe



Lower Refining Runs Provide Support to EU Marketing Margins

For European Downstream, Refining Risks Will Remain, Value Likely to be in Fuels Marketing

- Negative drivers for European refining are likely to remain in place for upcoming years...
- ...which will lead to continued closures across NWE and the Med
- Refinery closures will help to support distribution margins and provide advantages to well integrated players
- For investors, need to be extremely selective in going after refineries up for sale...
- ...and need to privilege downstream integrated positions

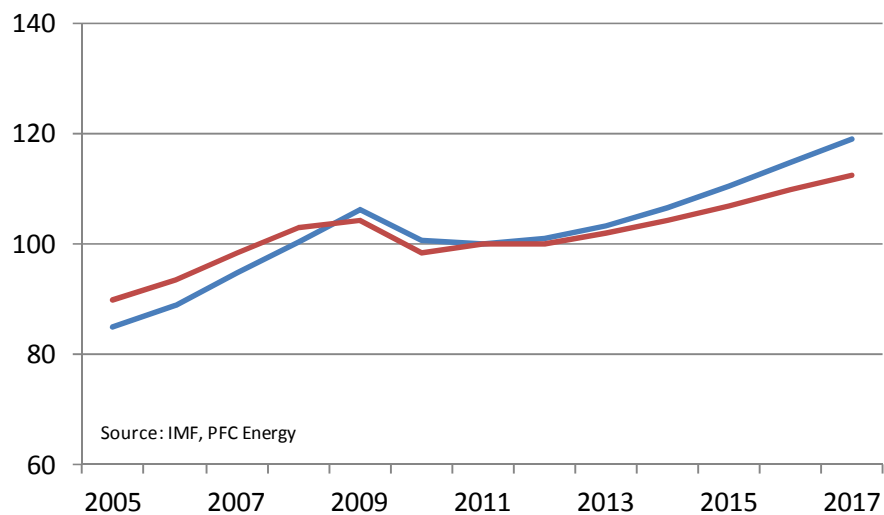
Refining Risks Remain Very High in Europe – Marketing to Provide Earnings



**Balkans, Eastern Med More
Positively Oriented, but Refining
Investment is Challenging**

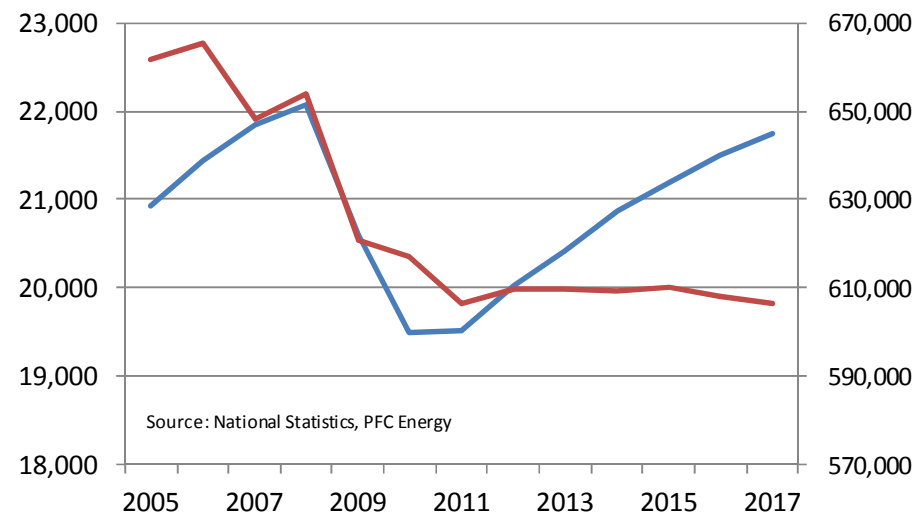
Balkans Expected to Partly Buck Decline Trend of Europe

GDP - Balkans vs Europe
Base 100 in 2011



— Balkans — EU

Product Demand - Balkans vs Europe
kTons per year

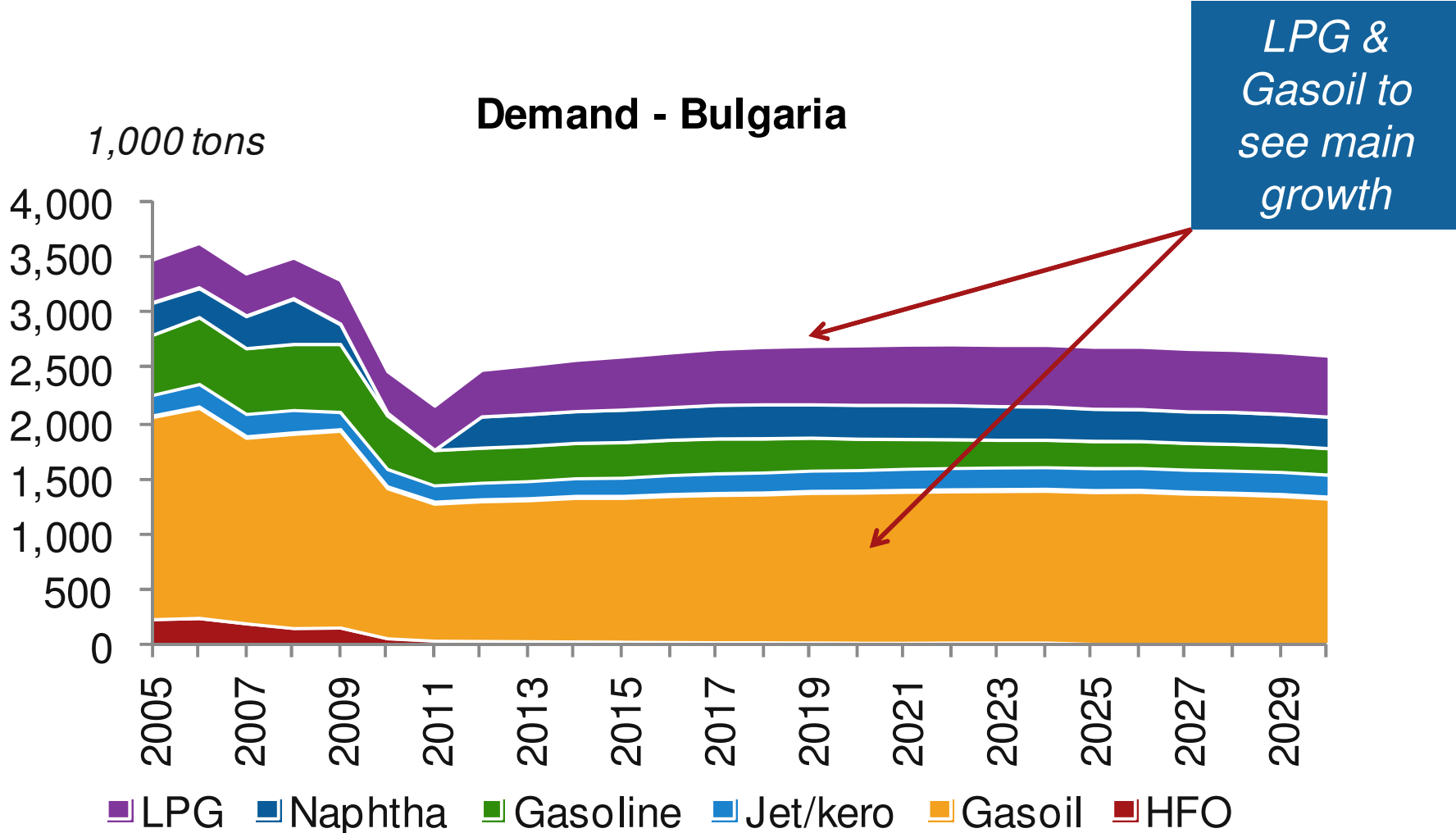


— Balkans — EU

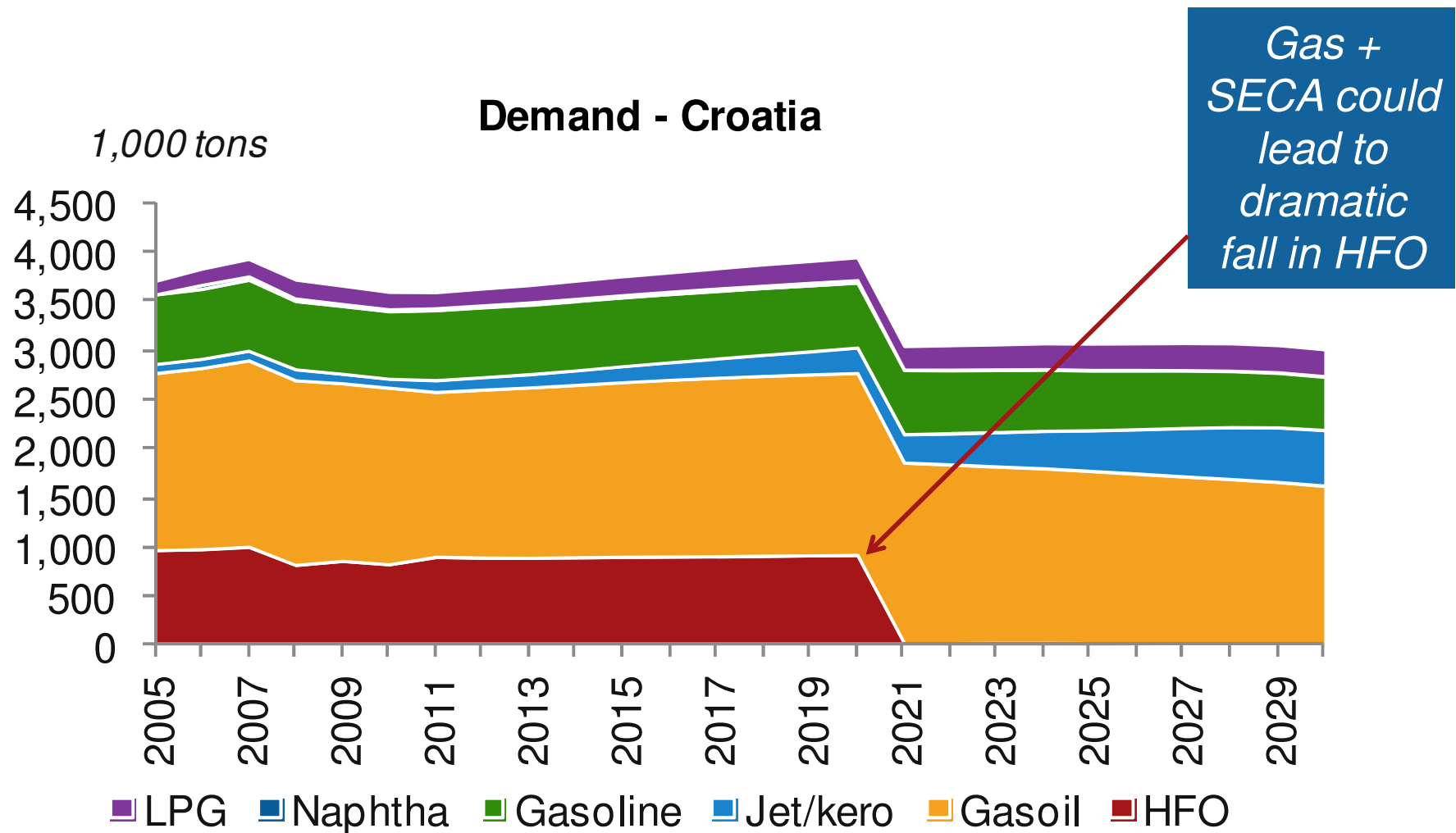
European demand to decline

Balkan demand expected to rise

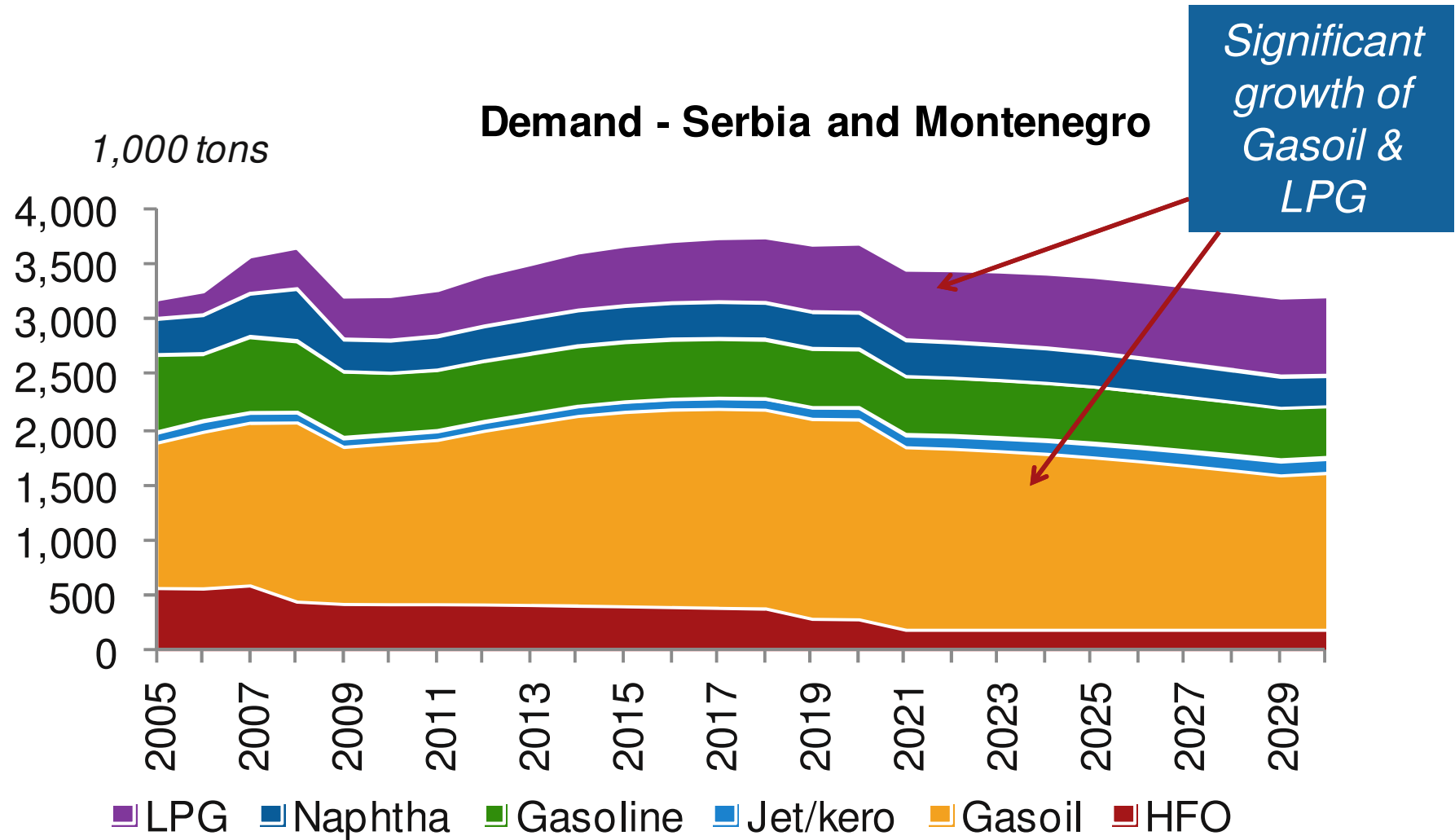
Bulgaria: Mild Growth Expected in Medium Run



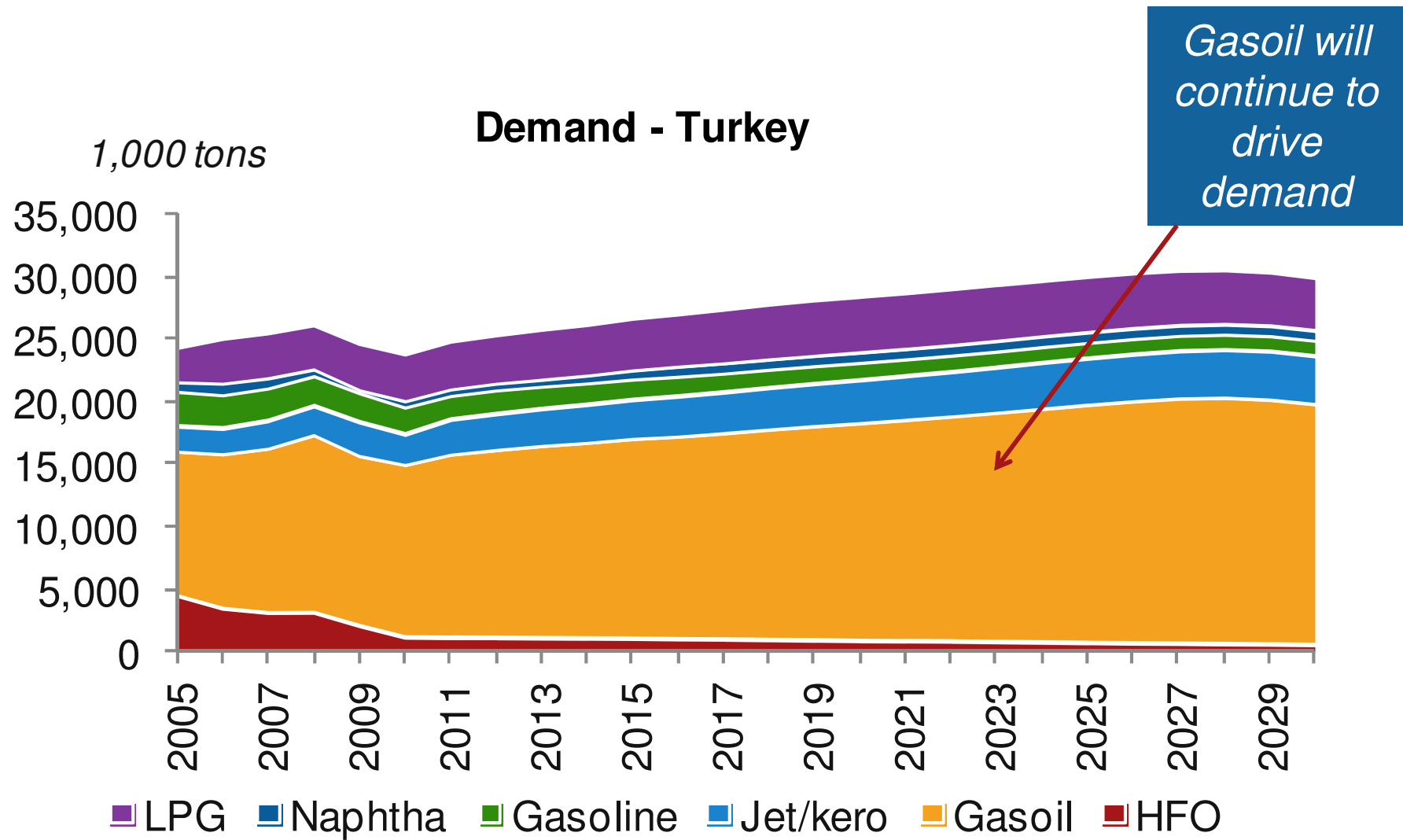
Croatia: Demand Growth Expected Until Fuel Oil Phase Out



Serbia & Montenegro: Medium Term Growth Expected

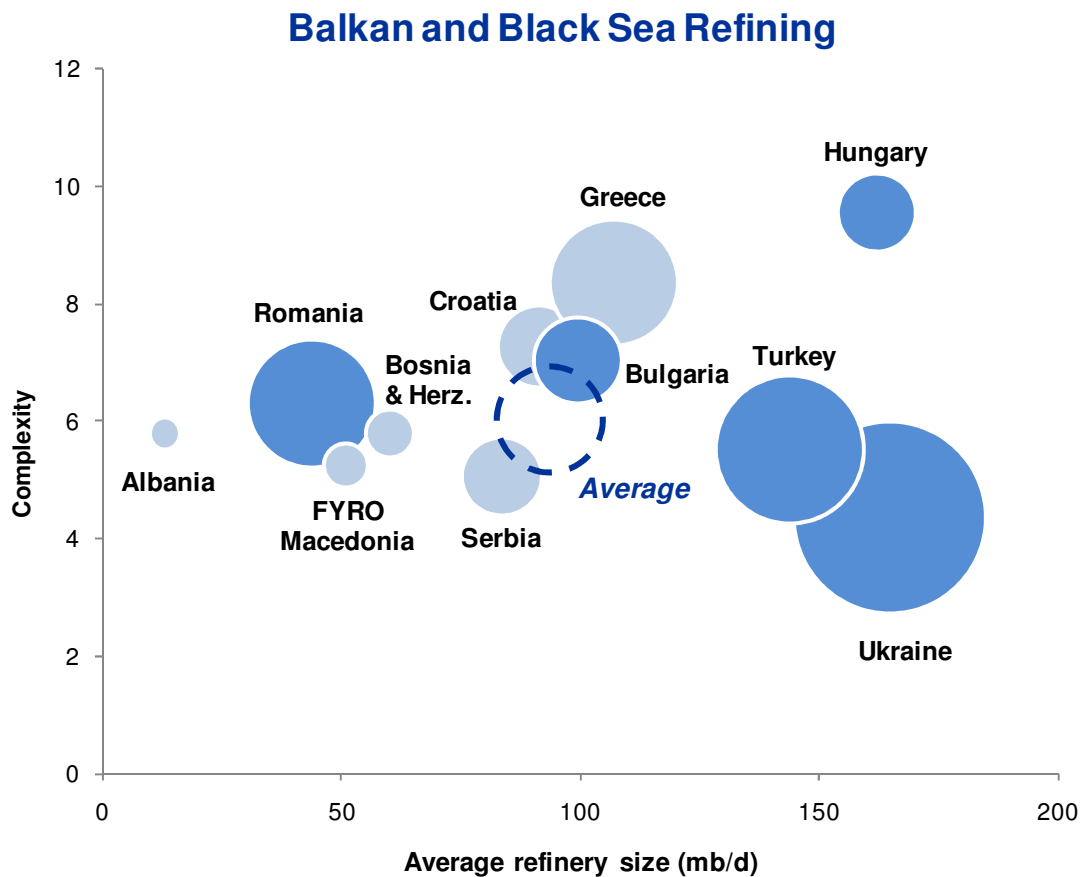
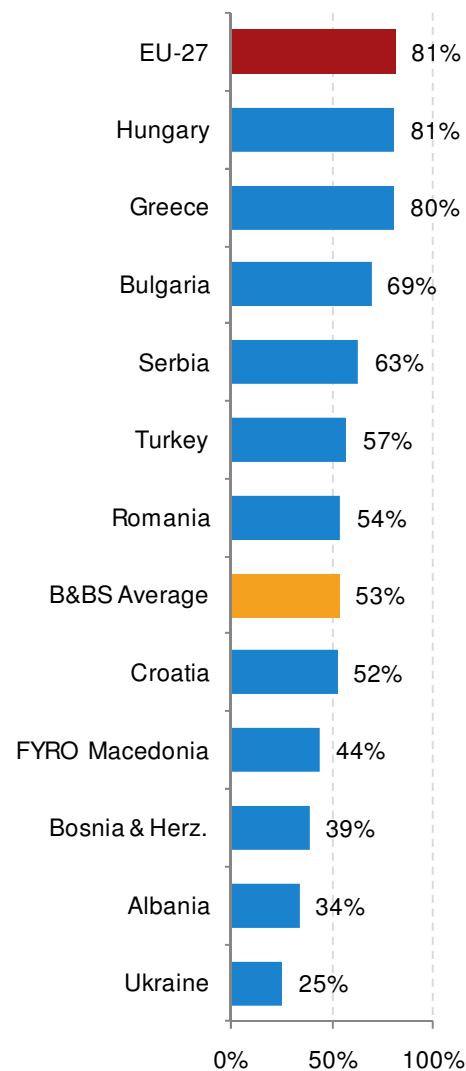


Turkey: Significant Growth Expected



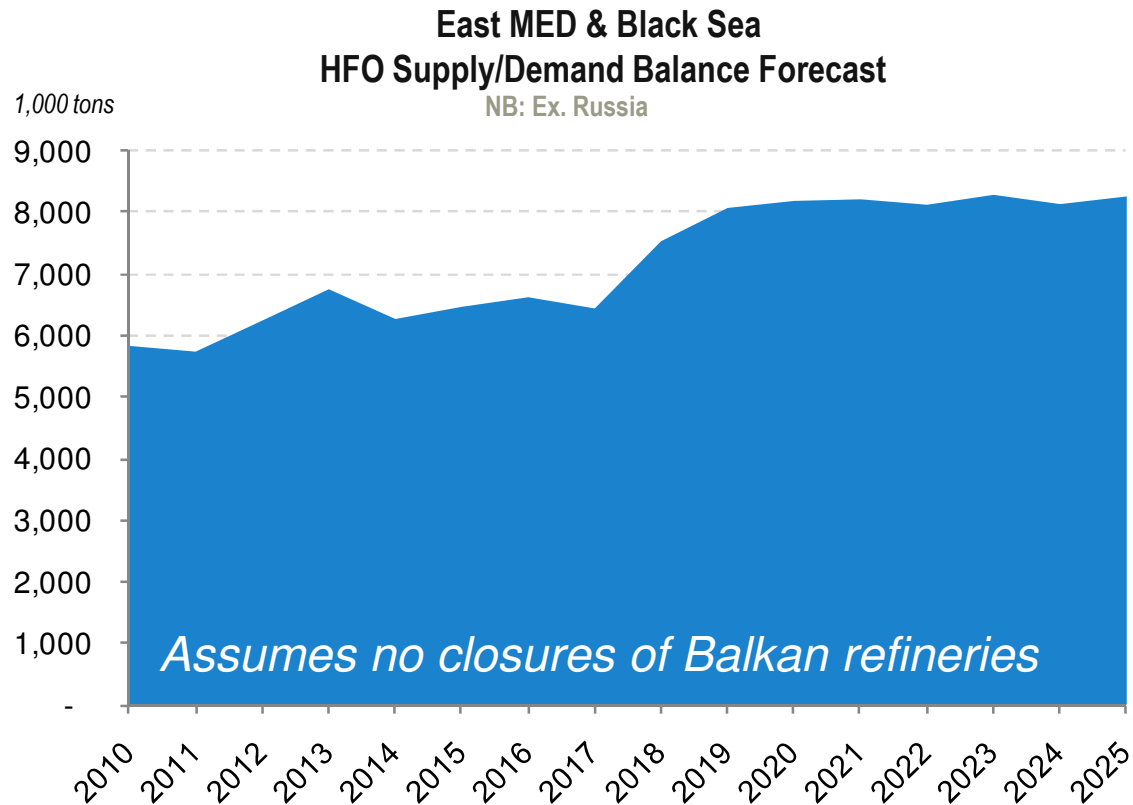
Refineries in East Med Are Poorly Equipped for Challenging Environment, Especially in Balkans

Area refiners are dealing with their own set of troubles...

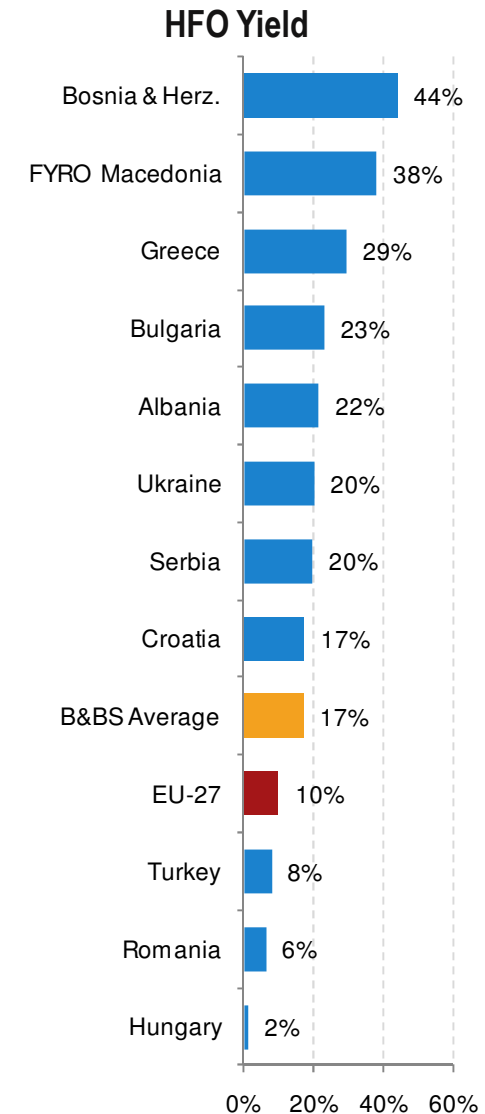


- Inoperable capacity (particularly in Ukraine and the Balkans) skews utilization figures significantly below global averages
- Smaller average size limits benefits of scale and increases exposure for shutdown

HFO Substitution Major Challenge Going Forward



- As local demand falls and major conversion investments are delayed, HFO overhang will continue to grow
 - Tightening fuel standards (bunkering, electricity generation) limit local demand markets
- Does not take into account Russian HFO exports flowing through Black Sea, which are ~15 mmt/y
 - Cannot compete with Russian refining system



Balkans / East Med Considering Large Number of Refining Investments

- Romania
 - Recent stream of HCK at Petromidia
 - Thermal cracked & asphalt unit due in 2013 at Petrobrazi
- Bulgaria
 - Resid HCK planned for 2015 at Bourgas
- Croatia
 - Hydrotreating to meet Euro V almost completed at Rijeka
 - Coker under consideration
- Serbia
 - Resid upgrading under consideration
- Albania
 - Considering upgrade to run more domestic crude
- Greece
 - Elefsina refinery has seen major upgrade
 - New CDU, flexicoker and hydrogen plant
 - Thessaloniki also completed significant upgrade
 - Boosts middle distillate yield
- Turkey
 - Residuum upgrade project at Izmit, planned for 2014 streaming
 - Will boost production of middle distillates
 - STAR greenfield refinery planned for 2014 startup
 - Located near Izmir
 - Socar and Turcas behind project
 - Will provide feedstocks to nearby Petkim petrochemical plant
 - Will add 6 mmtons of Euro V diesel

Numerous mooted Balkan projects

SEast Med also actively investing

Criteria For Profitable Refining?

- Investors are finding times challenging for downstream investments

Criteria for Success in Refining

- 1 Scale** Refineries above 200 mb/d usually enjoy unit cost advantages versus smaller sites
- 2 Complexity** Complex refineries generally produce more high value products and have more **flexibility**
- 3 Alignment with market** Refinery production should be well aligned with demand in target markets to prevent selling at a loss
- 4 Supply** Upstream integration with crude can give a supply cost advantage.
- 5 Downstream Integration** Downstream integration, for example with petrochemicals and lubricants, can add value
- 6 Location** Logistical advantages (crude supply, product offtake, access to market) are all important

East Med Refining Projects Unlikely to All Go Ahead

- European refining environment will remain highly challenging in the next few years
- Balkan refineries lack complexity and scale and produce too much fuel oil...
- ...in a market that will see less and less fuel oil demand
- Investing to upgrade all East Med refineries is not realistic...
- ...only a few projects will be economically viable

Need to be very selective in choosing upgrade projects

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