Understanding the sector’s current strength’s and future competitiveness
Regional refiner’s perspective

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MOL Group: Upstream-Driven, integrated company

**GROWTH DRIVERS & COMPETITIVE ADVANTAGE**

**Upstream**
- Field development driven growth in short term (RUS, PAK)
- Transforming of existing exploration assets to production in the mid term (KAZ)
- Long term growth based on exploration-led strategy (Kurdistan Region of Iraq)
- Know-how in EOR/IOR technologies
- 647 mboe SPE 2P reserves
- Over 100% organic reserve replacement ratio in 3 years average
- 115 mboepd production*
- Production in 7, exploration in 11 countries

**Downstream**
- Largest assets have high net cash margin
- Strong landlocked market position with outstanding captive market
- New Downstream Program aims to reach USD 500-550 mn improvement; USD 150 mn already delivered in 2012
- 5 refineries, 470 thbpd
- 19 mtpa sales
- 1.700+ filling stations
- 2 petrochemical plants

**Gas Midstream**
- Growing international transit
- Good geographical position
- Gas Transmission: 5.560 km pipeline in Hungary
- Gas Storage capacity: 1.9 bcm
- Secured EUR-base return on storage

* Excluding Syria
Local European refiners have disadvantage vs. import product sources
As they are smaller and less complex compared to their competitors

Note: (1) Black line represents the range the lowest and highest capacity /WM complexity refinery in the region
(2) The grey bubble represents the weighted average capacity /WM complexity refinery of the region
(3) Wood Mac complexity is a measurement of the refineries complexity. The higher the number is the more valuable the total output of the refinery is likely to be
(4) CEE refiners include Poland, Czech Republic, Slovakia, Austria, Hungary, Romania, Croatia, Serbia)

• Typical European refineries’ capacity is around half of US peers and only the third of Indian export refiners, in CEE it is even less
• European refiners cannot enjoy the benefits of economies of scale
• Too many too small refineries

• European refining sector average complexity is far less than in other regions
• Their cost levels are much higher...
• ... and share of higher value added products is lower

Source: WoodMackenzie, MOL Group Strategy calculation
Dieselisation continues, while oversupply of gasoline remains

*European refining system is not able to fit the demand*

- Refinery yield does not match consumption patterns
- Gasoline – diesel rate in demand is 1:3, however in total production is 1:2
- Refinery configuration (gasoline/diesel) yield cannot be changed dramatically; refinery mismatch is rather a capability than a variable feature

**The market is long in gasoline, and short in diesel...**

**Source:** WoodMackenzie, IHS CERA

- Imbalances will remain in the future
- Traded amounts of refined products will gain further ground
- Role of trading will further strengthen

**... and it does not seem to change in the medium run**

**Source:** WoodMackenzie, IHS CERA
Russian pressure on European downstream will not ease ...  
... refinery upgrades will leave sign in product flows

- In 2016 fuel oil yield will equal 20%, falling by 22% from 2012 levels (to below 1.1 mbpd in 2016)
- Significant hydrocracking, FCC and coking capacities will come on-stream by 2015 (only in 2013 there will be a 36% increase in hydrocracking capacity)
- Additional Russian upgrade capacities will absorb VGO supply and a part of fuel oil
- Intermediate products share will significantly drop, quality product inflow from Russia expected to increase after 2015

**Russian refinery expansion**

![Diagram showing Russian refinery expansion with data points for each year from 2010 to 2017.](diagram)

**Source:** JBC
Change of vehicle fleets also challenges European downstream

Increasing fuel efficiency and potential penetration of alternative drivetrains decrease fossil fuel demand

Europe’s car park will continue to grow by 1.5% pa out to 2015 and beyond

- EU environmental legislation is forcing car manufacturers to improve vehicle fuel efficiency, recent improvement in mileage has been massive, consumption by new car is expected to fall by 24% by 2020

- Hybrid and electric cars penetration will remain around 10% in new car sales by 2015 and share in total car fleet will be well below 5% (Deutsche Bank)

- CEE is a follower rather than leader in technological evolvement, but the growth of the penetration rate is expected to be higher once the breakthrough happens

Source: Eurostat, LMC Automotive, Deutsche Bank estimates, IEA
Fuel demand under different electric drivetrain scenarios

Key factors influencing penetration:

- **Battery price** (and battery lifespan)
- Due to higher **efficiency improvements** already achieved in gasoline engines, dieselization is lower than in the baseline
- Differences in fuel cost are less important than differences in **purchase price**
- **Subsidies** have significant effect in mass penetration only if purchase prices are close to each other

**Scenario 1: ICE efficiency improvement**

- Near the minimal EV penetration, long-term total motor fuel demand also lower than the baseline, but gasoline demand a little less affected

**Scenario 2: Partial electrification**

- The spread of electric drivetrains have a small impact on freight transport, so diesel demand is less threatened

**Scenario 3: Full electrification**

- The great conquest of electric cars, fossil fuels will be in minority within 25 years, rate of EVs in total car fleet can be around 15% by 2020 and 45% by 2030

**Scenario 4: Green light for natural gas**

- If a considerable fueling infrastructure will be established in the next years, natural gas becomes a real option quickly, especially in the heavy-duty vehicle segment
Regional refinery consolidation started at the Millenium by regional players...

...in the last 5 years Russian players started to increase their influence in the CEE/SEE markets

<table>
<thead>
<tr>
<th>Year</th>
<th>1995-2000</th>
<th>2000-2006</th>
<th>Since end of 2000’s</th>
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<tbody>
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<td>Early movers to the region</td>
<td>Regional players start market consolidation</td>
<td>Russian players increase influence in CEE/SEE</td>
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**1995**
- CZ: Ceska Rafinierska
- RO: ConocoPhillips
- SK: Ceska Rafinierska
- HR: Petrotel/Neftochim Burgas

**1997**
- CZ: Shell
- RO: Lutoil
- BG: Eni

**1998/’99**
- CZ: Shell
- RO: Lutoil
- BG: Eni

**2000**
- RO: MOL
- SK: MOL
- HR: OMV
- CZ: ORLEN

**2003**
- RO: MOL
- SK: MOL
- HR: OMV
- CZ: ORLEN

**2004**
- RO: MOL
- SK: MOL
- HR: OMV
- CZ: ORLEN

**2005**
- LIT: Mazeikiu Nafta
- RO: Rompetrol
- BIH: Bosanski Brod

**2006**
- RS: NIS

**2007**

**2009**

1995-2000: Early movers to the region
2000-2006: Regional players start market consolidation
Since end of 2000’s: Russian players increase influence in CEE/SEE
The lack of refinery closures and shrinking demand intensifies competition in CEE region

- Small and mid-size refineries are competing in the region
- Local companies became regional players after privatisation of assets (Austrian OMV – Romania, Hungarian MOL – Slovakia & Croatia, Polish PKN – Czech Republic, Lithuania)
- Russian companies privatized assets in South Eastern Europe
- Demand decline, upgraded refinery capacities and lack of refinery closures result in overcapacity
- **Consolidation still going on**: e.g. OMV reducing presence in marginal countries of its business (sold retail business in Bosnia-Herzegovina, Serbia, Croatia)
- **Strong competition putting pressure on margins**: e.g. on the Polish market between Lotos and PKN Orlen

- Practically flat diesel demand
- Gasoline oversupply
- Huge black product surplus

Survival of refineries depends on effective adaptation to demand patterns
Russia is having significant, ~60 mtpa swing capacity (meaning ability to amend direction of export volume), which will increase even further in coming years.

ESPO and BPS-2 expansions result in significant capacity additions exceeding crude export volumes and therefore give Russia flexibility in managing its export flows and the possibility to adapt export strategy in response to changing market needs.

It is technically possible to redirect crude export flows between East and West.

* Capacity expansion plans:
  BPS-2 will be boosted to 50 mtpa by 2015
  ESPO-1 will be increased to 50 mtpa by 2014 and potentially to 80 mtpa by 2020 (ESPO-2)

Source: Transneft
Petchem integration offers valuable synergy opportunities for refiners

Naptha-based petchem products can have significant value added to downstream operations

Non-Ethylene derivatives (production based on heavier feedstock – naphtha, gasoil)

- A switch to lighter feedstocks has reduced the amount of butadiene and propylene available
- Recent and ongoing capacity additions in Central Europe
  - PTA/PX:
  - Mixed xylene:
  - Butadiene:

Source: Nexant, Bloomberg

BTX: Benzene, Toluene, Xylene
European refineries have to find the way of optimal operation

Different solutions are available to increase the profitability of European refineries

**Production yield improvement**
- Aim is to **achieve the best yield** reflecting to the transition of product flows
- **Efficiency improvement** is key to remain competitive
- **Optimal crude selection** could add further value

**Specialty product producer**
- Focus is on **specialty product development** by properly recognizing the additional **needs of the market**
- **High level of integration** is essential to efficiently produce the required volume streams

**Flexibility**
- Increased volatility makes **flexible operation valuable** as the ability to **act quickly** enables profit generation through harvesting market opportunities
- Flexible operation also ensures the **optimization of the portfolio of refinery units**

Units unable to contribute to these factors will have hard fight for survival with very limited chance to win it
Thank You for Your Attention

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