Third IEA-IEF-OPEC Symposium on Energy Outlooks

IEF Secretariat, Riyadh
22nd January 2013

Session I
OPEC medium- and long-term oil outlook
Reference Case: key assumptions

- Oil prices
  - Slightly higher assumption than in WOO 2011
  - Remains at $100/b for medium-term, rising to $155/b by 2035 (nominal terms)
  - Cost of marginal barrel
  - Regulatory reform recognizes impact of excessive speculation

- Economic growth
  - Major impact of the Eurozone crisis
  - Long-term growth affected by changing demographic trends
  - Total factor productivity improvements

- Major energy policies passed into law are incorporated
Energy use will continue to rise, oil will remain leading fuel for some time, gas use rises strongest

World energy supply by fuel type in the Reference Case: *oil remains leading fuel, and there are sufficient resources…*

... but gas use rises the strongest
World oil demand outlook in the Reference Case (mb/d)

<table>
<thead>
<tr>
<th></th>
<th>2010</th>
<th>2015</th>
<th>2020</th>
<th>2025</th>
<th>2030</th>
<th>2035</th>
</tr>
</thead>
<tbody>
<tr>
<td>OECD</td>
<td>46.8</td>
<td>45.8</td>
<td>45.2</td>
<td>44.0</td>
<td>42.6</td>
<td>41.1</td>
</tr>
<tr>
<td>Developing countries</td>
<td>35.4</td>
<td>40.8</td>
<td>46.3</td>
<td>51.3</td>
<td>56.0</td>
<td>60.6</td>
</tr>
<tr>
<td>Eurasia</td>
<td>4.8</td>
<td>5.2</td>
<td>5.4</td>
<td>5.5</td>
<td>5.6</td>
<td>5.6</td>
</tr>
<tr>
<td>World</td>
<td>87.0</td>
<td>91.8</td>
<td>96.9</td>
<td>100.9</td>
<td>104.2</td>
<td>107.3</td>
</tr>
</tbody>
</table>

- Medium-term oil demand reaches 92 mb/d by 2015
- By 2035, oil demand is 107 mb/d, 20 mb/d higher than 2010
- OECD oil demand peaked in 2005
- 87% of increase in demand is in developing Asia
- Transportation sector is key to demand growth
World oil supply outlook in the Reference Case (mb/d)

<table>
<thead>
<tr>
<th></th>
<th>2010</th>
<th>2015</th>
<th>2020</th>
<th>2025</th>
<th>2030</th>
<th>2035</th>
</tr>
</thead>
<tbody>
<tr>
<td>OECD</td>
<td>20.0</td>
<td>21.8</td>
<td>22.6</td>
<td>23.3</td>
<td>24.1</td>
<td>24.9</td>
</tr>
<tr>
<td>Developing countries, excl. OPEC</td>
<td>16.9</td>
<td>17.8</td>
<td>19.2</td>
<td>19.3</td>
<td>19.1</td>
<td>19.3</td>
</tr>
<tr>
<td>Eurasia</td>
<td>13.4</td>
<td>13.9</td>
<td>14.3</td>
<td>14.7</td>
<td>15.1</td>
<td>15.5</td>
</tr>
<tr>
<td>Processing gains</td>
<td>2.1</td>
<td>2.4</td>
<td>2.6</td>
<td>2.7</td>
<td>2.9</td>
<td>3.0</td>
</tr>
<tr>
<td>Total non-OPEC</td>
<td>52.3</td>
<td>55.8</td>
<td>58.6</td>
<td>60.1</td>
<td>61.1</td>
<td>62.7</td>
</tr>
<tr>
<td>OPEC NGLs</td>
<td>4.9</td>
<td>6.2</td>
<td>7.2</td>
<td>8.0</td>
<td>8.9</td>
<td>9.4</td>
</tr>
<tr>
<td>OPEC GTLs</td>
<td>0.1</td>
<td>0.3</td>
<td>0.4</td>
<td>0.5</td>
<td>0.6</td>
<td>0.6</td>
</tr>
<tr>
<td>OPEC crude</td>
<td>29.3</td>
<td>29.6</td>
<td>30.9</td>
<td>32.5</td>
<td>33.8</td>
<td>34.9</td>
</tr>
</tbody>
</table>

- Over medium-term non-OPEC supply rises by more than 4 mb/d 2010-2016
- Key drivers: Caspian, Brazil, Canada, US shale oil
- Long-term: wide diversity of sources, large increase in non-crude liquids supply, as well as crude oil from Caspian, Brazil and OPEC
- Non-crude liquids satisfy three-quarters of demand increase to 2035
- OPEC crude share in the future similar to today
Scenarios underscore uncertainties

● Downside risks to economic recovery and longer term growth: Lower Economic Growth (LEG) Scenario

● Upside potential for global economy over the longer term: Higher Economic Growth (HEG) Scenario

● Possible underestimation of supply prospects: Liquids Supply Surge Scenario (LSS)

● Scenarios suggest a wide range of required OPEC crude supply and investment
Scenarios underscore uncertainties

- Future need for OPEC crude would be less than today in downside risk scenarios
- But there is also upside potential
- These uncertainties are linked to upside and downside uncertainty for oil prices
Themes for the future: Supply

- Prospects for natural gas liquids (NGLs)
- Future contribution of tar sands, CTL, GTL
- Biofuels: policies, economics, technology, sustainability
- Cost of the marginal barrel
Themes for the future: Demand

- Road transportation sector
  - Efficiency and substitution
  - Impacts of policies
  - Product mix

- Other transportation
  - Aviation
  - Marine Bunkers

- Petrochemicals

- Developments in coal and natural gas use
Organization of the Petroleum Exporting Countries

www.opec.org

Thank you