Global Oil Outlook up to 2025

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Rising oil prices to unexpectedly high levels
(OPEC reference basket & WTI in $/bbl)

- The real price is still well below historical highs
- Non-energy commodity prices have also risen
- Non-fundamentals are highly influential in shaping sentiments and play a role in prices.

Nominal prices
- WTI
- OPEC R. Basket (ORB)

* year-to-date avg. up to June 13.

Average ORB R, Nominal, Real*

*/ inflation & exchange-rate adjusted. (Base: May 2006=100, US$/b)
Break in conventional stock/price relationship in crude WTI vs US crude oil stocks

Oil prices more disconnected from stocks than before
Since 2004, the flat move in stocks & prices has shifted to a higher level.

<table>
<thead>
<tr>
<th>Shift in price levels (US$/b)</th>
<th>max</th>
<th>min</th>
<th>average</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004</td>
<td>54</td>
<td>33</td>
<td>41</td>
</tr>
<tr>
<td>2005</td>
<td>68</td>
<td>44</td>
<td>57</td>
</tr>
<tr>
<td>2006 (Ytd)</td>
<td>72</td>
<td>59</td>
<td>66</td>
</tr>
</tbody>
</table>

R² = 0.7
OECD commercial stocks are at comfortable levels, yet prices remain high!

Confluence of factors:
- Strong global economic and, in turn, oil demand growth (’03-’05 increase: 5.4 mb/d)
- High capacity utilization in the supply chain, tightness in the downstream refining sector
- Heightened geopolitical concerns –fears of supply disruptions
- Increasing activity in futures market (new wave of capital movement by funds)
High OPEC production accommodates demand surge
Effective use of its spare capacity

- OPEC have increased production by 4.5 mb/d since 2002
- Accelerating capacity expansion to maintain adequate spare capacity

The chart shows the demand growth, OPEC spare capacity, and cumulative OPEC production increase from 2000 to 2006.
Continued steady growth in world economy
% growth in GDP

- Recent revisions confirm resilient world economic growth with forward momentum
- Growth in 2006 is steadily broadening beyond North America & China
- Chinese economy remains robust: 1Q 06 growth at 10.2% above expectations
- DCs economy in ‘06 expected to consolidate similar to ’05
- Impact of higher oil prices on global GDP have been so far limited (< 1% since ’02)
- Delicate balance between interest rates & inflation: interest rates will now be the focus!

![Graph showing economic growth in different regions and years](image-url)
Oil will remain single largest fuel in primary energy mix.
Conventional liquids resource base is sufficient

- Resources are plentiful…but prices can affect estimates
- Technology blurs distinction between conventional and non-conventional oil
- Resource base likely to continue to grow …especially with non-conventional oil
- Broad agreement among international agencies on this idea

Source: USGS

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**Graph: USGS estimates of remaining resources vs. cumulative production**

- Y-axis: Billion barrels
- Blue bars: USGS estimates of remaining resources
- Orange bars: Cumulative production

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Organization of the Petroleum Exporting Countries
“...ensuring the stabilisation of prices in international oil markets, with a view to eliminating harmful and unnecessary fluctuations.

“...securing a steady income to the producing countries, an efficient, economic and regular supply of petroleum to consuming nations; and a fair return on their capital to those investing in the petroleum industry.”

OPEC Statute, 1961

“...there is a need to support fair and stable prices, sustainability of supply, and security of demand.”

The OPEC Long-Term Strategy, 2005
Global energy security is fundamental to life in 21st Century

The basis for global energy security is a balanced and mutually supportive supply and demand network at reasonable price levels to both consumers and producers.
OPEC 10 capacity expansion plans, (tb/d)

- Over 100 projects with cumulative investments of more than $100 billion!
- 50% of these projects are in partnership with IOC’s
- OPEC-10 cumulative capacity increase > 4 mb/d by 2010, with Iraq: 5-6 mb/d
- Production of other liquids + NGL is also expected to increase by 2 mb/d

Source: based on projects and other assumptions including secondary sources
Oil demand outlook, mb/d

- Oil demand increases by 30 mb/d by 2025, or 1.5 mb/d annually
- Four-fifths of the increase in demand comes from developing countries
- Transportation continues to be the dominant source of growth (~60 %)
- Many uncertainties: GDP, technology, policy.

<table>
<thead>
<tr>
<th>Reference</th>
<th>2005</th>
<th>2010</th>
<th>2015</th>
<th>2020</th>
<th>2025</th>
</tr>
</thead>
<tbody>
<tr>
<td>OECD</td>
<td>49.8</td>
<td>51.4</td>
<td>52.7</td>
<td>53.8</td>
<td>54.7</td>
</tr>
<tr>
<td>DCs</td>
<td>29.0</td>
<td>34.4</td>
<td>40.3</td>
<td>46.4</td>
<td>52.8</td>
</tr>
<tr>
<td>Transition economies</td>
<td>4.8</td>
<td>5.1</td>
<td>5.4</td>
<td>5.7</td>
<td>5.9</td>
</tr>
<tr>
<td>Total World</td>
<td>83.6</td>
<td>90.9</td>
<td>98.4</td>
<td>105.9</td>
<td>113.4</td>
</tr>
</tbody>
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Reference: 2005
Vehicle ownership per 1000 inhabitants in 2003

- In DCs: structural change in the economy - growing faster than the rest of the world, fueled by strong growth in oil.
- Long-way to go: in line with rising per capita income levels, low per capita oil demand is yet to approach levels of other countries!

### Vehicle ownership per 1000 inhabitants

- **USA**: 822
- **Japan**: 581
- **China**: 16
- **South Asia**: 10 or lower
- **Latin America, S. E. Asia and Middle East**: typically 50-200
- **Russia and East European countries**: tend to be 200-400
- **Most West European countries**: have 400-600
- **Most countries below 10 are in Africa**
- **50% of the countries in the World have fewer than 80 vehicles per 1000**

### Per capita oil demand ratios

<table>
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<th></th>
<th>India</th>
<th>China</th>
</tr>
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<tbody>
<tr>
<td>Brazil</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td>UK</td>
<td>14</td>
<td>7</td>
</tr>
<tr>
<td>USA</td>
<td>34</td>
<td>16</td>
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In DCs: structural change in the economy - growing faster than the rest of the world, fueled by strong growth in oil. Long-way to go: in line with rising per capita income levels, low per capita oil demand is yet to approach levels of other countries!
Taxation of oil products
Diesel prices & taxes, December 2005

USA
Canada
Japan
France
Germany
Italy
UK

Crude CIF Price
Industry Margin
Tax

US$/litre

0.00 0.20 0.40 0.60 0.80 1.00 1.20 1.40

0.00 0.20 0.40 0.60 0.80 1.00 1.20 1.40
There is considerable uncertainty over how much oil OPEC will need to produce, (mb/d)

- Significant uncertainties with substantial downside risks.
- Considerable implications on the scale & timing of investments!
- “Road-map” for oil demand is called for!

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<tbody>
<tr>
<td>OECD</td>
<td>20.9</td>
<td>20.9</td>
<td>19.9</td>
<td>19.3</td>
</tr>
<tr>
<td>DCs (exc. OPEC)</td>
<td>16.1</td>
<td>18.2</td>
<td>19.4</td>
<td>18.9</td>
</tr>
<tr>
<td>Russia &amp; Caspian</td>
<td>11.7</td>
<td>13.1</td>
<td>14.9</td>
<td>15.3</td>
</tr>
<tr>
<td>Non-OPEC</td>
<td>50.5</td>
<td>54.3</td>
<td>56.8</td>
<td>56.4</td>
</tr>
<tr>
<td>OPEC (inc. NGLs)</td>
<td>33.1</td>
<td>36.6</td>
<td>49.1</td>
<td>57.0</td>
</tr>
</tbody>
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Uncertain future demand translates into a broad range of possible OPEC investment needs

- **Low growth**: $80-130 billion
- **Reference case**: $150-290 billion
- **High growth**: $230-470 billion

![Graph showing investment needs from 2006 to 2020 with three scenarios: Low growth, Reference case, and High growth.]
Distillation capacity additions vs. incremental crude runs

- Cumulative increase in crude runs
- Optimistic cumulative capacity additions
- Realistic cumulative capacity additions

Cumulative increases from 2005
Refining investments in the reference case 2005-2015,

Huge progress has been made in addressing local pollution concerns: evolution of pollutant emissions (individual cars)

Source: IFP
Carbon capture and storage

- Cost to sequester 750 gigatonnes CO₂ is small relative to Gross World Product
- CO₂ Capture issues
- CO₂ Transport & storage
- CO₂ EOR
- CCS demonstration projects exist
- But large scale demonstration projects are needed to push this technological option forward

Source: IEA
Enhanced & more in-depth Dialogue

“Dialogue… should be widened and deepened to cover more issues of mutual concern…”

*The OPEC Long-Term Strategy*

- 2005 — launch of formal Energy Dialogues between OPEC and: EU, China, Russia

- 3rd EU-OPEC Energy Dialogue (June 7, 2006)

- 10th International Energy Forum (IEF), Doha
3D seismic costs have doubled in the last 24 months.
Deepwater drilling day rigs up at least 50% in 12 months. Contracts at $500k/d for 2008.
Wage pressure is escalating with growing shortage of skilled labor (~15% rise in 2005).
Steel is a major component of infrastructure & facilities, with prices up 40% since 2004.

Cost split for a typical deepwater development

- Drilling: 25%
- Facilities: 20%
- Personnel: 10%
- Exploration: 10%
- SURF: 15%
- Infrastructure: 20%

Source: Goldman Sachs, OPEC Secretariat
Concluding remarks

- Recent market conditions influenced by a convergence of factors
- Tightness in downstream sector as a potential source of instability
- Security of demand and security of supply are mutually supportive
- Uncertain scale of investment required in OPEC
- Investment requirements are large, subject to long lead-times and pay-back periods
- Key role of energy in supporting the three pillars of sustainable development (social and economic development and the protection of the environment)
- Recognise the role of technology in addressing climate change: carbon capture and storage
- The pressing need to eradicate human poverty: an overriding priority
Thank you

www.opec.org

Stability in the oil market