Energy and Environment: Challenges and Opportunities

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Offshore Arabia 2006
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Outline

- OPEC’s long-term world energy outlook
- Focus on the Middle East
- Environmental protection: challenges and opportunities
- Conclusion
Fossil fuels will continue to provide most of the energy needed.
## Oil supply and demand outlook, mb/d, reference case

<table>
<thead>
<tr>
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<th>2005</th>
<th>2010</th>
<th>2015</th>
<th>2020</th>
<th>2025</th>
</tr>
</thead>
<tbody>
<tr>
<td>World demand</td>
<td>83.2</td>
<td>90.7</td>
<td>98.0</td>
<td>105.6</td>
<td>113.1</td>
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<tr>
<td>Non-OPEC supply</td>
<td>50.1</td>
<td>55.8</td>
<td>58.3</td>
<td>59.4</td>
<td>58.9</td>
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<tr>
<td>OPEC supply (incl. NGL)</td>
<td>33.1</td>
<td>34.9</td>
<td>39.7</td>
<td>46.2</td>
<td>54.3</td>
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</tbody>
</table>
In 2005 OPEC accounted for 78% of global crude oil reserves…

…but only 42% of production
But there are major uncertainties...

...concerning required OPEC volumes...

...and OPEC investment needs
Major oil exporting regions, 2005 and 2015

Oil exports from the Middle East will increase by almost 4 mb/d

- Latin America
- Africa
- Russia/Caspian
- Middle East
Increased marine trade has environmental implications

Substantial increases in tanker traffic expected in Gulf region

The seas of this region are already among the busiest in the world

Highly vulnerable to pollution

The countries of the region have been exceptionally proactive

Increased costs are an inevitable consequence of stricter environmental standards

Points to need for assistance
Huge progress has been made in addressing local pollution concerns:

Evolution of pollutant emissions (individual cars)

Expected levels of sulphur content in automotive diesel

... but major challenges still lay ahead

Source: IFP and IFQC
Refinery investment requirements
2005 - 2015

Total investment needs to 2015:
$310 billion (2005 prices)

Investment gap of $110 billion?
OPEC: An impressive reduction in gas flaring

Gas flared per barrel of crude produced

- OPEC
- non-OPEC
Cleaner oil and gas technology: the promise of carbon capture and storage

- CCS is a promising technology to address climate change concerns
- Industrialised countries should take the lead in this area
- EU-OPEC Roundtable and CDM Conference, Riyadh, Sept. 2006

Source: IPCC
Conclusions

- OPEC in general, and the Gulf Region in particular, will grow in importance in supplying the world’s energy needs
- This has important implications for the environment
- Local and regional initiatives have proven highly successful
- Many challenges ahead…
- …but also many opportunities
- RECSO is part of the solution
- OPEC is committed to environmental protection, as reflected in its recently published Long Term Strategy
- Need to deal with environment holistically, in the context of all pillars of sustainable development