Energy Markets: The Long And The Short Term

Christof Rühl, Group Chief Economist, BP plc.
Washington, April 2010
Outline

- Long term context
- Structural change in oil markets
- Natural gas: a new game
  - How does it matter?
- Conclusion
The Long Term: Real Commodity Prices

Index: average 1970–2008 = 100

- Oil
- Wheat
- Iron & Steel
Energy Demand Growth

Oil

Gas

Coal

Mboe/d

OECD

Non-OECD

OECD

Non-OECD

OECD

Non-OECD

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The Future Is Here: Oil Demand Growth

Contribution to GDP growth

Share of growth


OECD Non-OECD

OECD Non-OECD

Oil consumption growth

Mb/d


OECD Non-OECD

OECD Non-OECD

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Spot and Futures Prices (Brent)

$/bbl

2007 2008 2009 2010 2011 2012 2013

Jan 07  Jul 08  Mar 10

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OPEC Supply Management, 2007–09

y-o-y change (Mb/d)

$/bbl

Saudi announces increases

OPEC announces cuts

Oil price (rhs)

Saudi Arabia
Kuwait, UAE
Other

Jan-07  Jul-07  Jan-08  Jul-08  Jan-09  Jul-09

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Consumption Growth, 2003–2009

y-o-y change (Mb/d)

Annual data

Quarterly data

First improvement since 4Q 2007

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1. Demand: OECD Has Peaked

Index: 1Q06=100

- Non-OECD
- OECD
- World

OECD: 3.5 Mb/d lost 2007–09

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2. Supply: The Spare Capacity Challenge

Average demand growth

Jan-08  Apr-08  Jul-08  Oct-08  Jan-09  Apr-09  Jul-09  Oct-09

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US Gas Production

Gas production

Conventional gas

Non-conventional gas

Production vs. rig count outside Gulf of Mexico

Gas rig count

Sources: Includes data from US DOE and Baker Hughes

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US Prices Chasing Coal Parity

Gas Gains Cost Advantage
In Power Generation*

US Gas–Coal Substitution
Gas share in total electricity generation from coal and gas

* Accounting for thermal efficiencies and transport cost of coal

Sources: includes data from Platts, NYMEX, EIA STEO

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Meanwhile, LNG* Integrates…

By importer

Flexible LNG Switching Markets

y-o-y change Atlantic Basin cargoes

Sources: Includes data from Waterborne LNG

* LNG from Algeria, Belgium, Egypt, Nigeria, Norway, Trinidad and Equatorial Guinea
European Spot Prices Competing with Coal

**Spot Gas At Cost Advantage In Power Generation***

- **NWE Coal**
- **AGIP**
- **NBP**

**UK Gas–Coal Substitution**

Gas share in total electricity generation from coal and gas

- **2009**
- **2008**

Sources: includes data from Platts, McCloskey, European Climate Exchange, DECC

* Accounting for thermal efficiencies and CO₂ prices
Europe Switched Out of Pipelines

Impact on Russian Stocks

y-o-y change, Bcf/d

Pipeline from Russia

Jan-08  Apr  Jul  Oct  Jan-09  Apr  Jul  Oct
-12  -10  -8  -6  -4  -2  0  2  4  6

Jan  Mar  May  Jul  Sep  Nov

Range 2005-08
2008
2009

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1. Climate Change Policies

**World Carbon Emissions**

Index:
1970 = 100

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<th>Year</th>
<th>Non-OECD</th>
<th>World</th>
<th>OECD</th>
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<tr>
<td>2006</td>
<td>220</td>
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**CO2 Intensity of Energy**

Tons of CO2 per toe

<table>
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<th>Year</th>
<th>Non-OECD</th>
<th>World</th>
<th>OECD</th>
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<tr>
<td>2006</td>
<td>2.00</td>
<td>1.40</td>
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### 2. Energy Security

#### 3 Largest Energy Markets (N. America + Europe + Asia Pacific) vs. ROW

<table>
<thead>
<tr>
<th></th>
<th>Oil Consumption</th>
<th>Oil Reserves</th>
<th>Gas Consumption</th>
<th>Gas Reserves</th>
<th>Coal Consumption</th>
<th>Coal Reserves</th>
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<tr>
<td>N. America + Europe + Asia Pacific</td>
<td>72%</td>
<td>9%</td>
<td>60%</td>
<td>14%</td>
<td>88%</td>
<td>65%</td>
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<tr>
<td>ROW</td>
<td>28%</td>
<td>91%</td>
<td>40%</td>
<td>83%</td>
<td>12%</td>
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