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The International Oil Market Outlook:
The next 5 years

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The Vital Questions

- How much oil will the world consume in 2011?
- What role will OPEC play in world oil production?
- Where are the prospective areas for expansion of non-OPEC production?
- Will biofuels become an important factor in the oil market?

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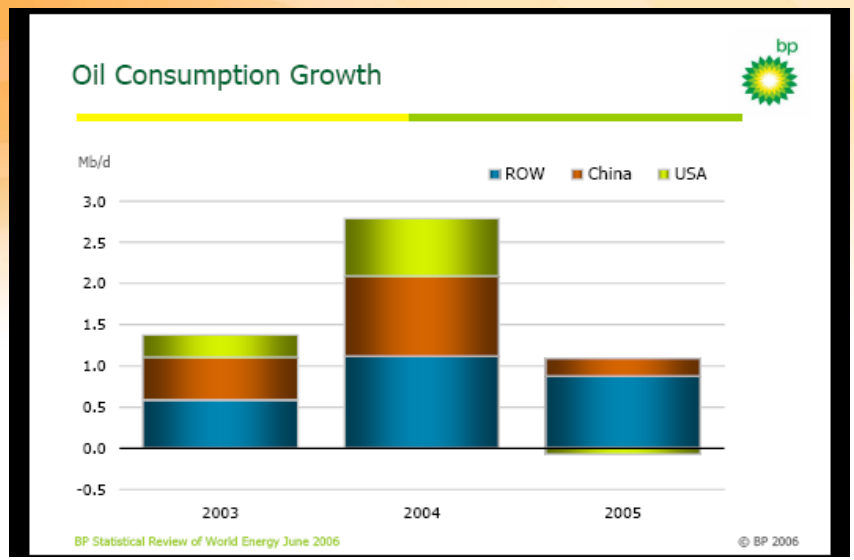

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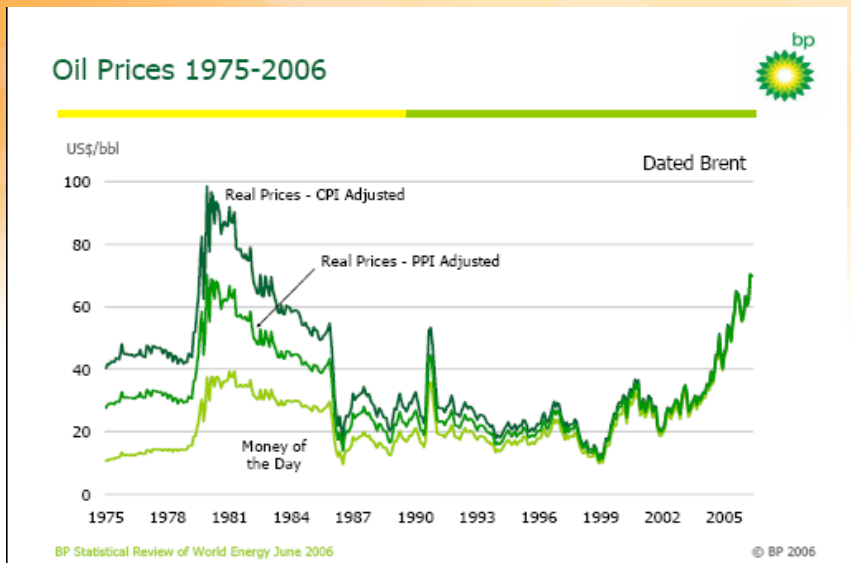
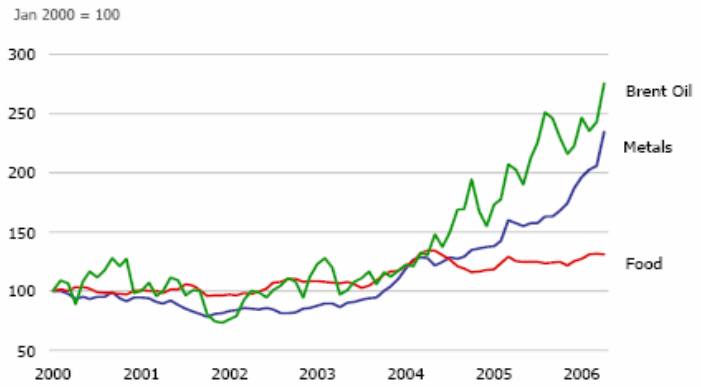
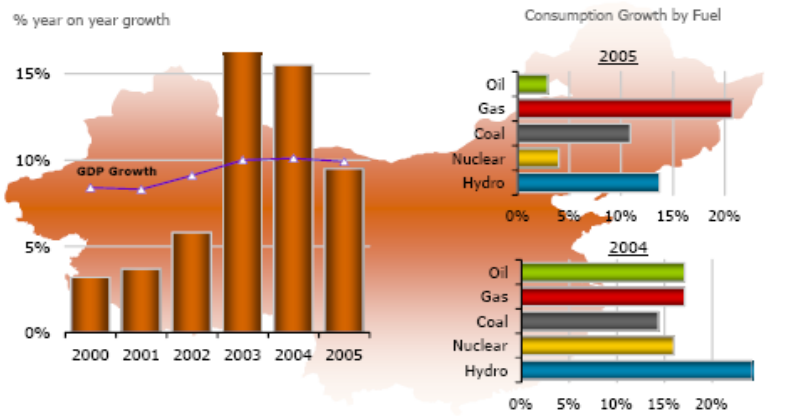


Commodity Prices



BP Statistical Review of World Energy June 2006

China Energy Consumption



BP Statistical Review of World Energy June 2006

The Market in 2004

- Surplus production capacity dropped sharply as a result of a sharp increase in the rate of growth of demand and failure of Iraq to make a significant impact on supply.
- Growth = 2.6 mb/day (annual average about 1 mb/day since 1990)
- In October 2004 surplus capacity dropped below 1 Mb/day.
- Prices broke through $50.
- Historically high utilisation rates at refineries worldwide.
- Very high sulphur heavy crudes at margin.

The Market in 2005

- Rate of growth of demand fell back to its average over the past two decades.
- Significant reductions in oil subsidies in Asia.
- OPEC quotas raised by 15%.
- Hurricane Katrina reduces US refining capacity.
- Supply disruptions in Nigeria, Iraq, Venezuela
- OECD oil stocks down to 15-year low.
- Prices passed $70 in September 2005.

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The Market in 2006

- OECD oil stocks increased.
- Capacity constraints facing all producers.
- Persistent supply disruptions or threats continue: Iran, Nigeria, Iraq, Venezuela.
- High oil prices reducing demand growth.
- Long-term incremental cost of supply of mid-$20s/bbl now perceived to be nearer $35-40/bbl for non-OPEC supply.

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Trend to 2011: Demand

- Current price and income effects to moderate
- Demand growth around 2% a year forecast by IEA (1.8% = average over past decade):

  93.7 mb/d (2011) 84.8 mb/d (2006)
- Asia is the major source of demand growth
- Increase in demand for transport fuel is expected to be around 2.5% p.a.

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Constraints on Upstream Investment

- Constraints in drilling/exploration capacity
- Higher prices are encouraging host governments to tighten access conditions and fiscal and regulatory terms for foreign operators
- Rise of “resource nationalism”, particularly in South America and the FSU
- Geopolitical tensions: Iraq, Iran, Nigeria, and Venezuela
- Perception that equilibrium oil price is around $35-40/bbl (i.e. $70-80 will not last)
- Advances in technology to increase recovery rates

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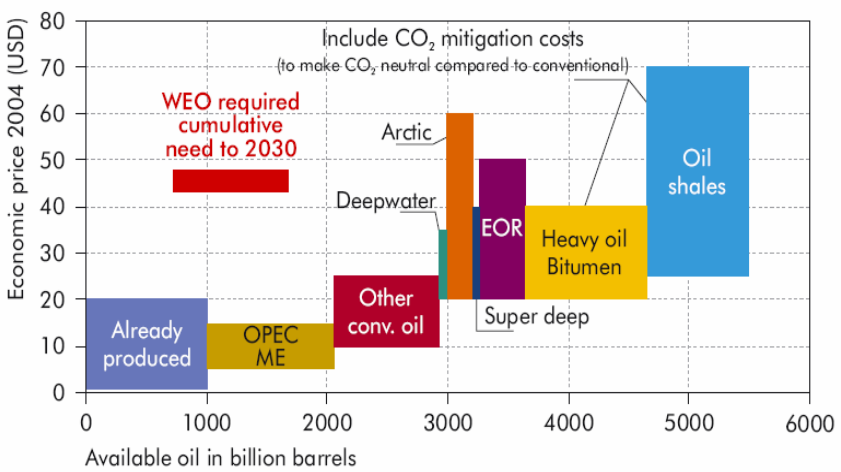
Trend to 2011: Supply

- Surplus capacity to rise to more comfortable levels (4-6 mb/d by 2011)
- Non-OPEC supply growth will lag behind growth in demand. Key projects in Angola, Brazil, FSU, Norway and US Deep GOM
- IEA forecast that OPEC crude production could rise to 36.3 mb/d by 2011 (2006 = 33 mb/d): largely from Saudi Arabia but also Algeria, Iran, Kuwait, Nigeria, Qatar and UAE

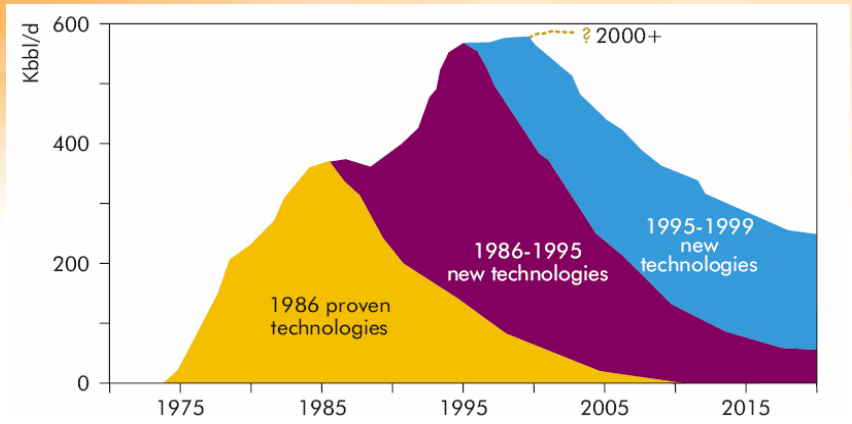
Biofuels

- Ethanol and bio-diesel expected to reach at least 1.2 mb/d by 2011 (840 kb/d in 2006)
- In 2005 supplied 2% of world's gasoline and 0.2% of diesel
- Price of feedstock an issue
- Scale economies required
- Impact of government policies: agricultural subsidies, excise duties, carbon pricing, mandatory renewables targets

Oil cost curve, including technological progress: availability of oil resources as a function of economic price (Source: IEA)



Impact of technology on production from the North Sea in thousand barrels per day (Source: Shell)



Conventional/non-conventional oil

Definitions by no means universally agreed, but:

Conventional

- All oils having a specific gravity between 20° and 50° API

Non-Conventional

- Heavy oil & bitumen
- Oil shales & oil sands
- CTL and GTL technologies

New conventional sources

- Deepwater
  2000-3500 metres (currently Gulf of Mexico, offshore W. Africa and offshore Brazil)
- Arctic
- Super-deep reservoirs
  4000+ metres (e.g. North Sea's Elgin-Franklin is 6000 metres below the seabed)

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Potential unconventional sources of supply

- Heavy oil, bitumen and oil sands
  Large deposits in Canada, Russia, and Venezuela (recovery is highly capital intensive)
  Potentially massive (4 trillion barrels in Canada and Venezuela alone: at 20% recovery these reserves outnumber all of those in the ME).
- Oil shales
  Worldwide reserves 2.6 trillion boe.

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Backstop technologies

Short-term technology
- Hybrid vehicles (plug in?)

Short-term fuels
- Methanol (environmental concerns – CO_2)
- GTL using stranded or associated gas (scale problems)
- Bio-diesel (scale problems)
- Ethanol (technical and scale problems)
- Bio-butanol (scale and cost problems)

Longer-term technology
- Battery vehicles
- Hydrogen/fuel cell vehicles

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World Energy Outlook 2005

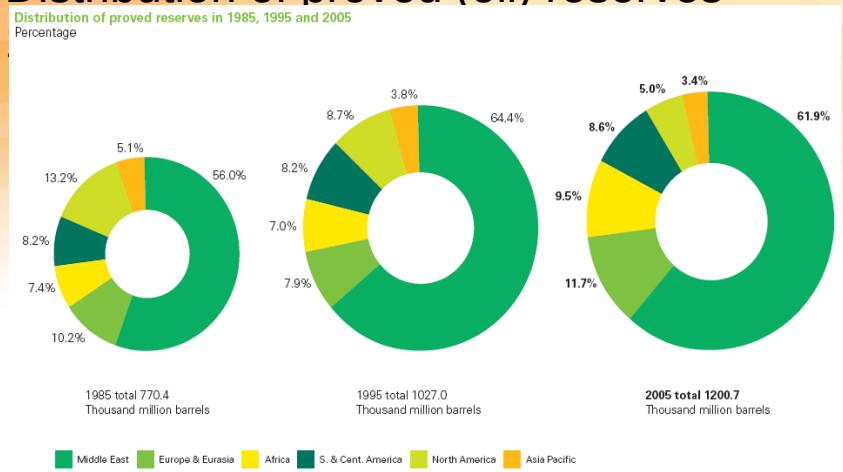
IEA projections to 2030

- World energy demand to increase 50% (bau); 37% (env. policy)
- Cumulative investment of $17 trillion required to ensure supply ($3 trillion for oil, and equivalent to twice the annual amount spent over the past decade)
- Greater dependence on Middle East and North Africa (MENA) for oil and gas supplies
- Energy-related CO_2 emissions to rise by 52% (bau)
- Oil (2004) bau prices: $35 (2010), $39 (2030)
- Oil (2004) deferred investment: $52 (2030)

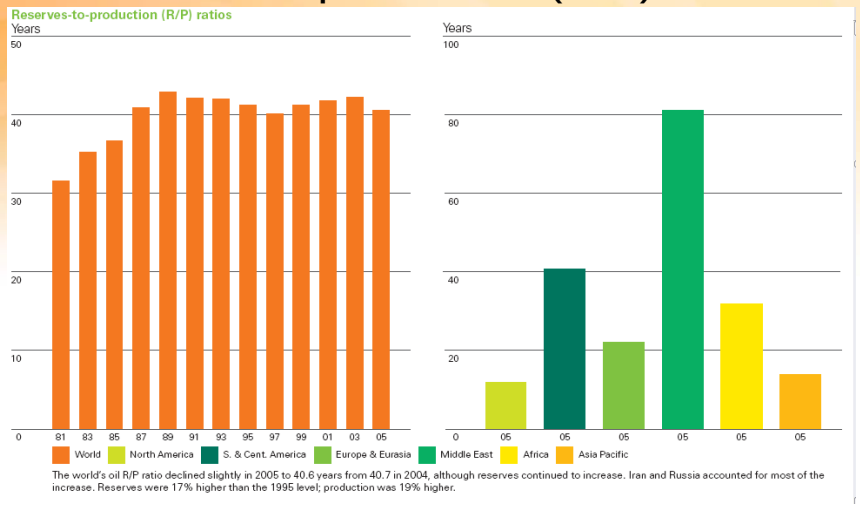
The projected bau trends lead to a non-sustainable future, from both an energy-security and an environmental perspective

ANNEXES

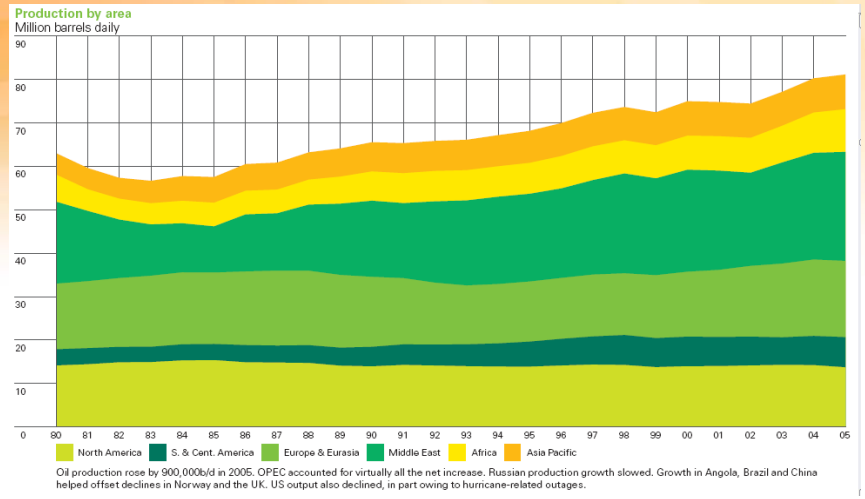
Distribution of proved (oil) reserves



Oil reserves-to-production (R/P) ratios



Oil production by area



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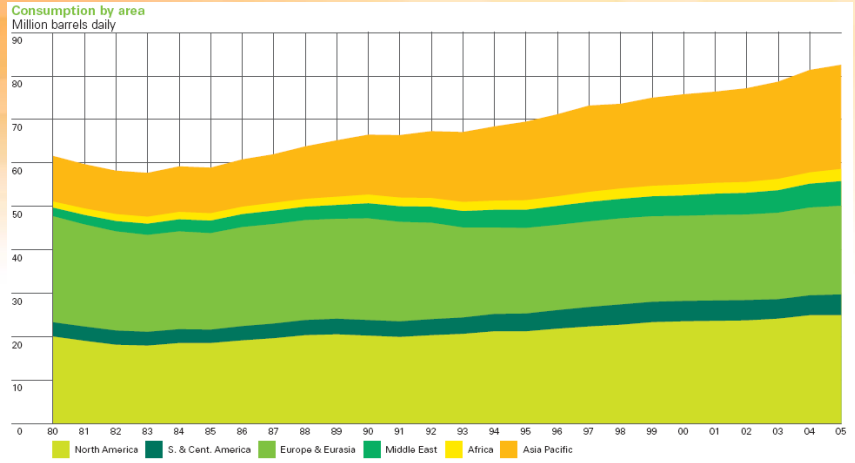
Oil consumption by area



Oil consumption growth slowed to 1 million b/d in 2005, below the 10-year average. Chinese consumption growth dropped from 1 million b/d in 2004 to 200,000b/d in 2005. Oil use fell in three of the six largest consuming countries: the USA, Germany and India.

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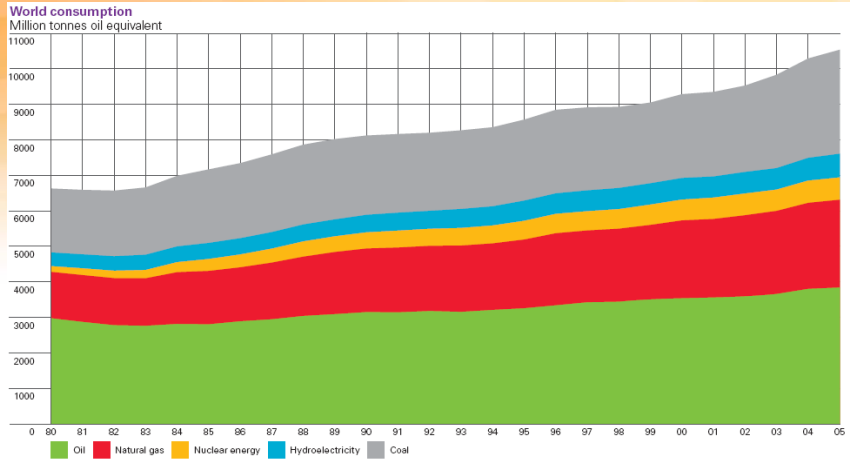
World primary energy consumption



Global primary energy consumption growth slowed in 2005 but still exceeded the 10-year average. Asia accounted for nearly three-quarters of global growth, with China alone accounting for more than half. In the past decade, natural gas and coal have increased their shares of the total at the expense of oil, nuclear energy and hydroelectricity.