



International Association of Oil and Gas Producers

Energy Security: The Role of International Oil Companies

Norbert Liermann
Brussels, October 25, 2006

Who are OPG ?

- International Association of Oil & Gas Producers
 - Exploration and production companies
 - To represent the interests of E&P to international regulators and legislative bodies

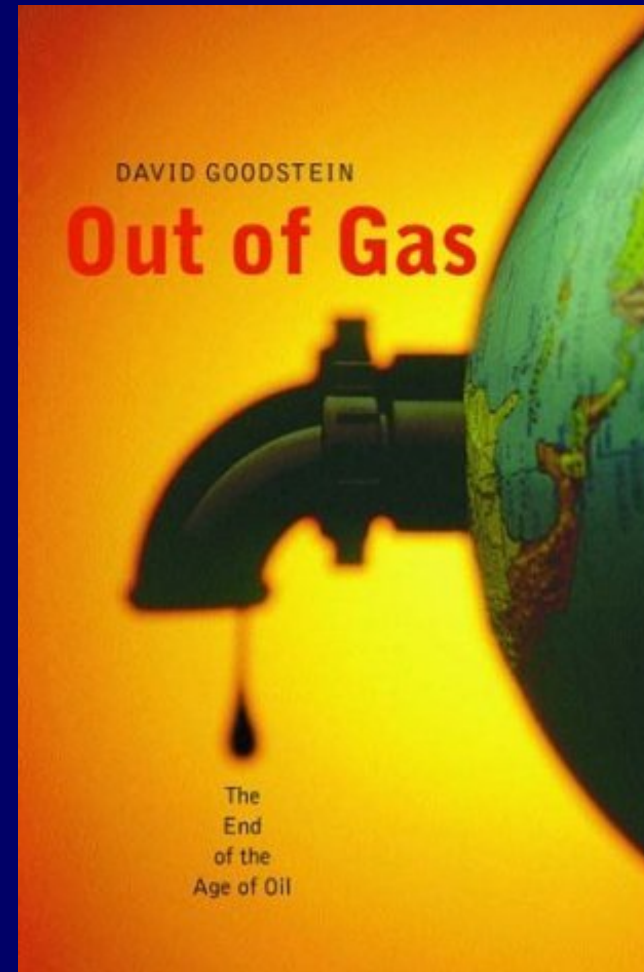
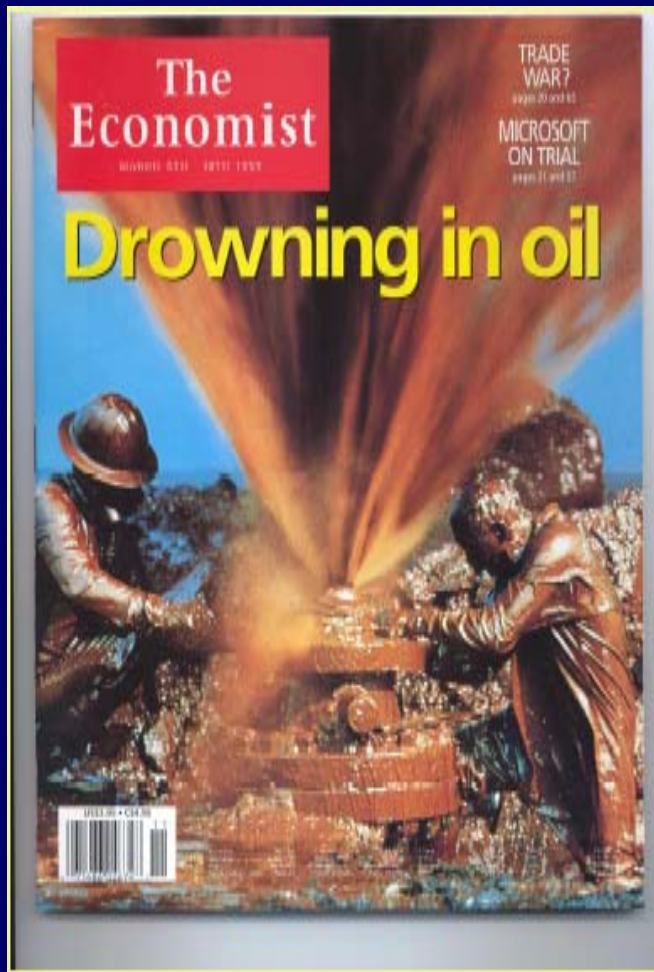
- Members account for:
 - More than 50% of the world's oil output
 - About 33% of global gas production

- Office in London – global affairs
- Office in Brussels – EU

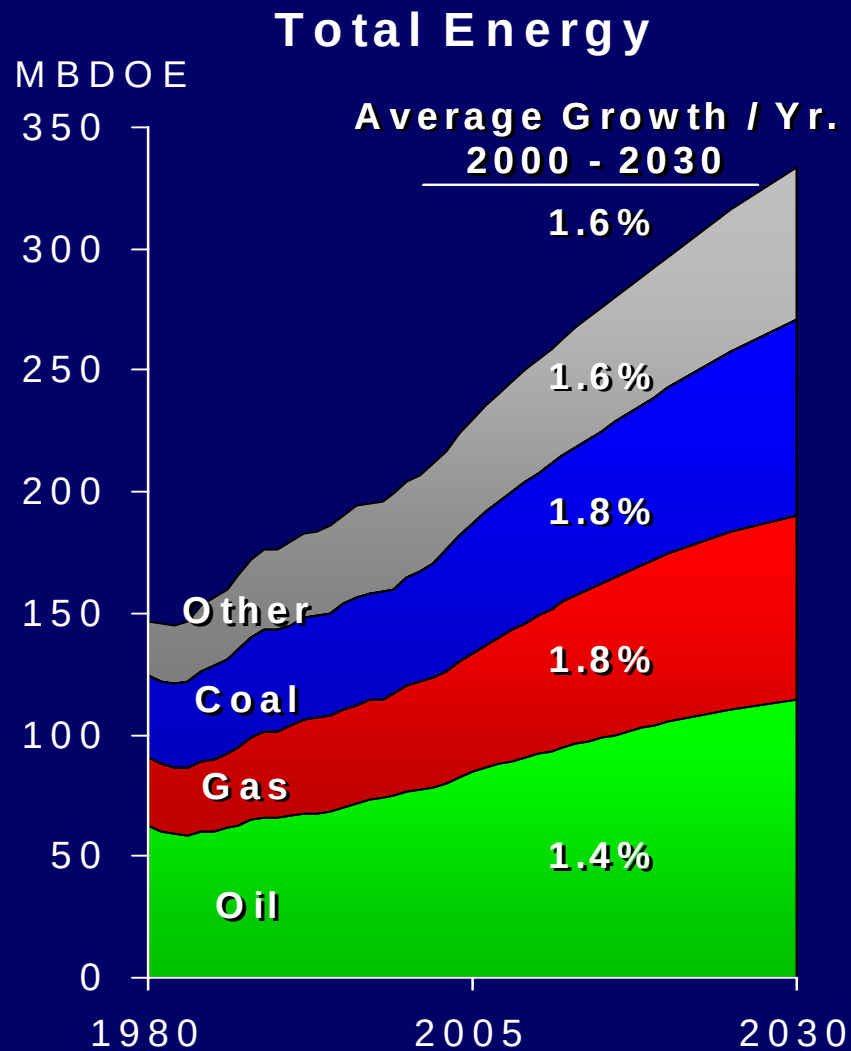
Agenda

- **Global / Europe energy outlook**
- **Resource base**
- **Investment activity**
- **Role of technology**
- **Europe in a changing market**
- **Competition for resources**

Changing perceptions ...



Global energy - growth continues

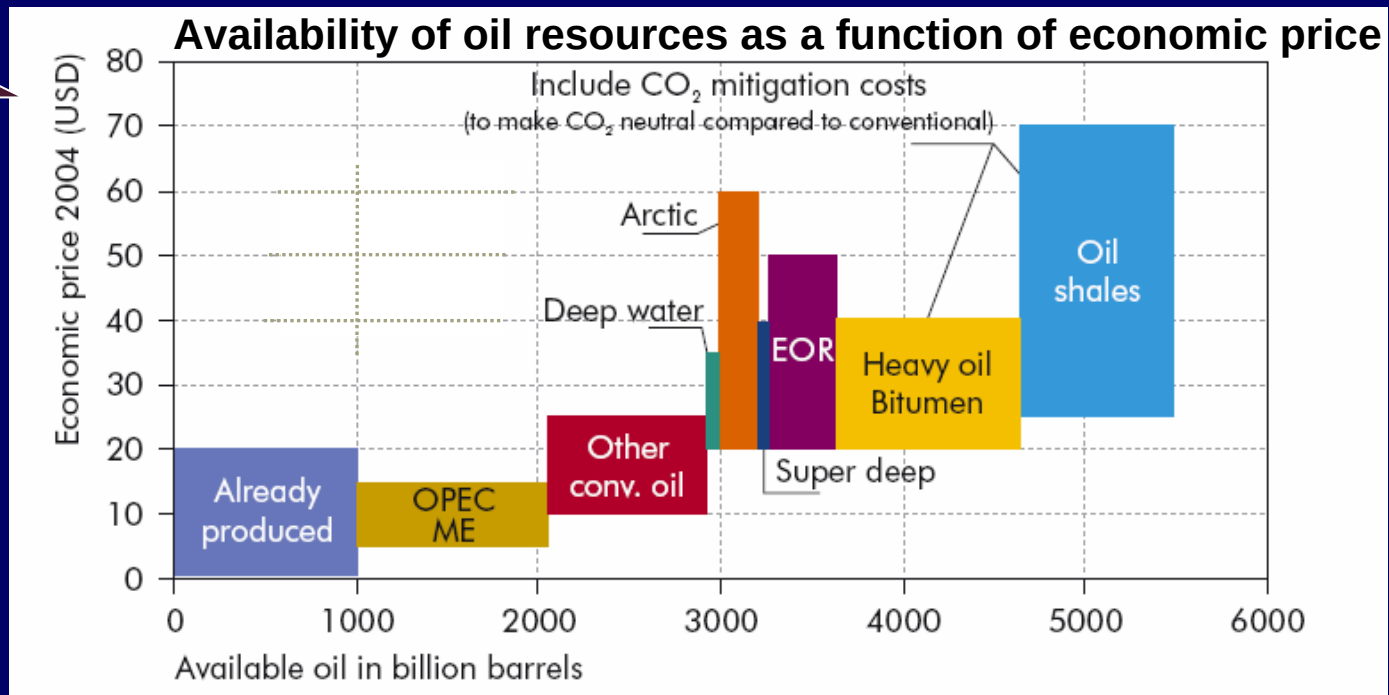


- Energy demand fuelled by economic and population growth
- Energy price trends and developing countries' demand remain uncertain
- Energy industry and governments have important roles in meeting supply & demand

Source: ExxonMobil, 2006

A substantial resource base exists...

... at a growing price

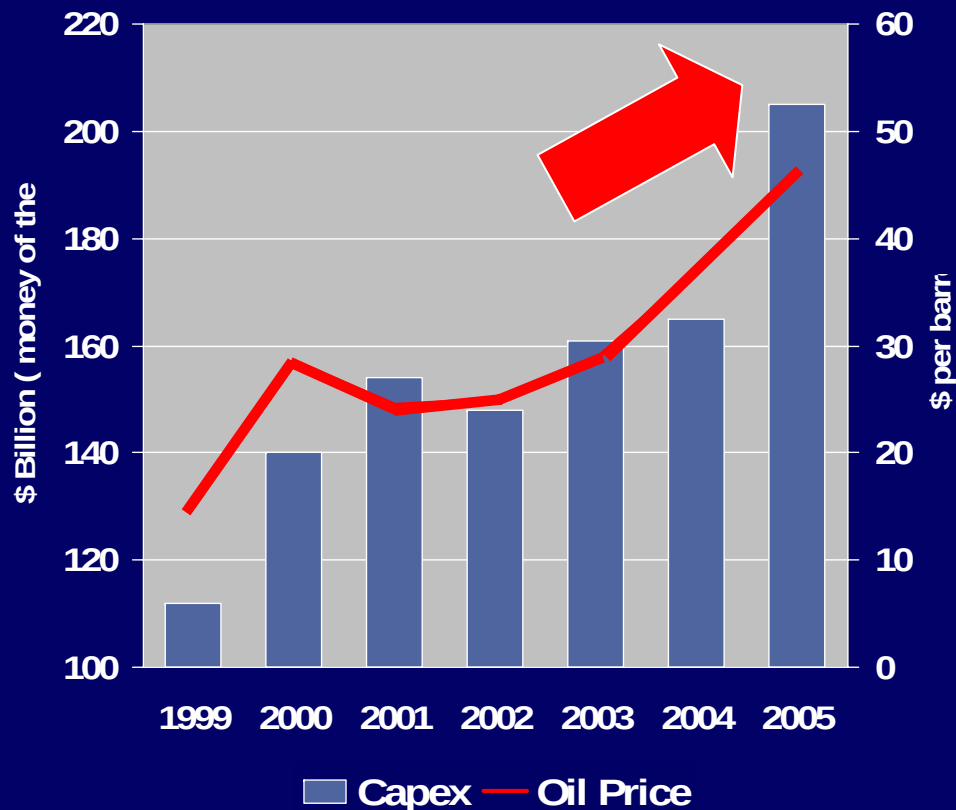


... in need of modern technology

Source: IEA

Industry investment is up ...

Global Upstream Investment



- **Upstream investments**
 - Up by ~ 90% since 1999
 - In 2005 at \$200 billion
 - In 2006 at \$260 billion (?)
- **Investment requirement to 2030**
 - \$200 billion annually
 - In total \$ 5 trillion
- **Industry cost inflation**
 - Drilling rigs
 - Equipment

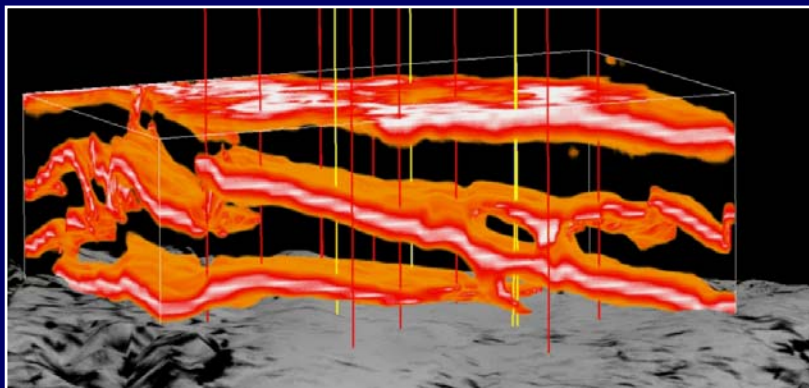
Source : J.S Herold / Harrison Lovegrove

... supported by modern technology

Harsh Environments



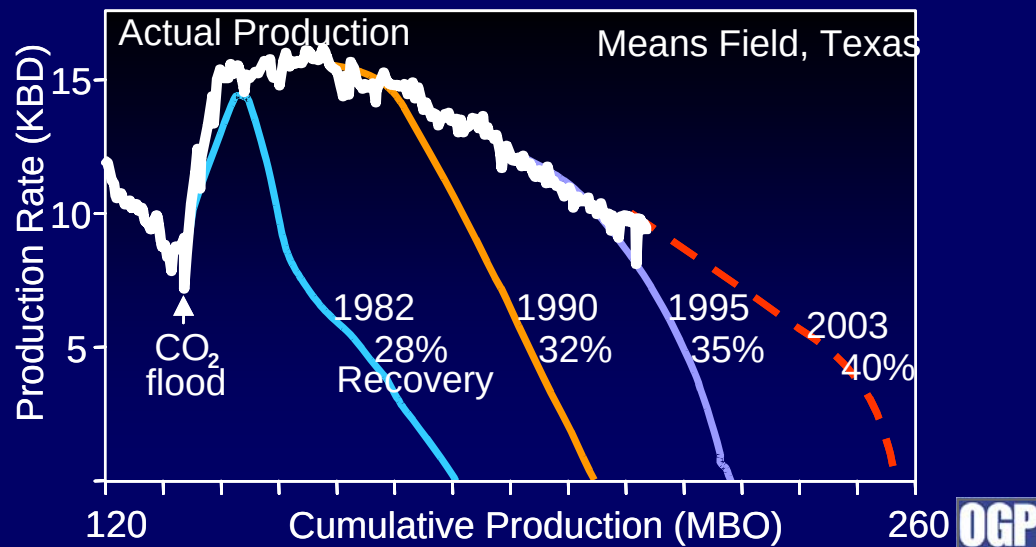
Reservoir Imaging



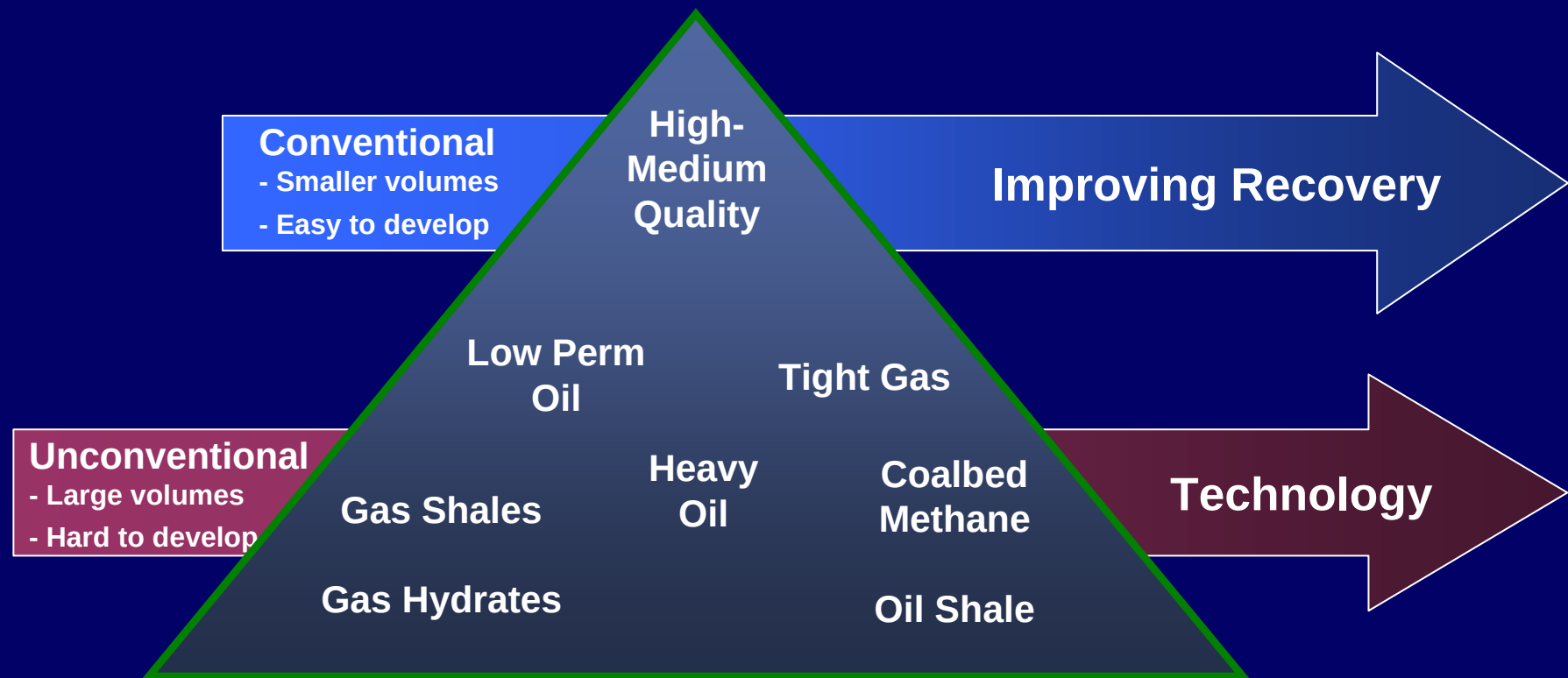
Extended Reach Drilling



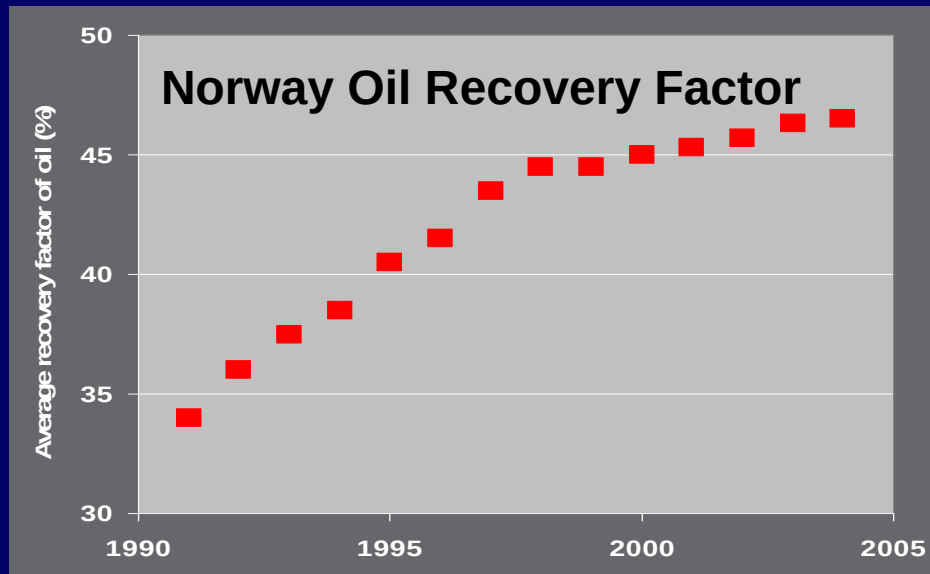
Enhanced Oil Recovery



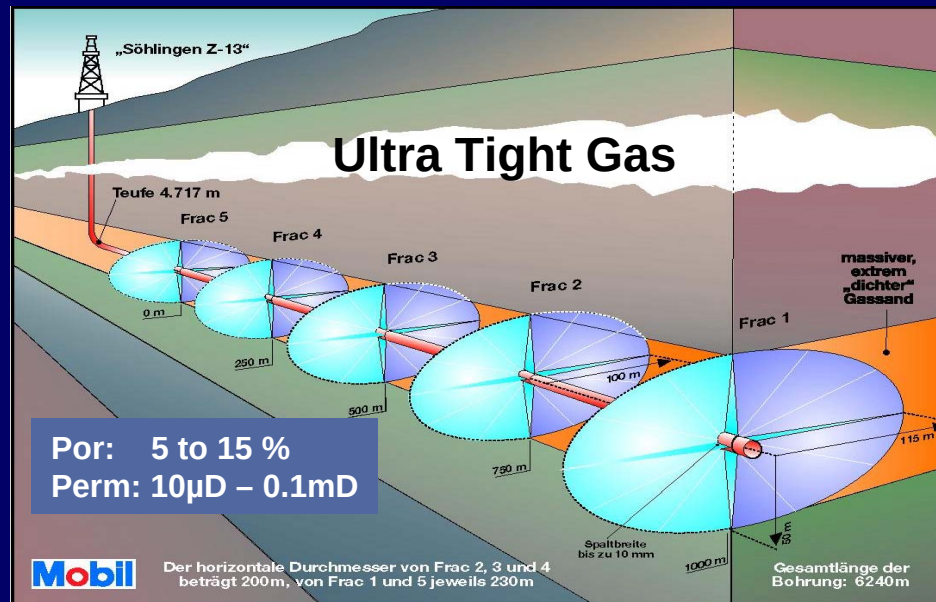
Two strategies ...



... expanding the technological frontier

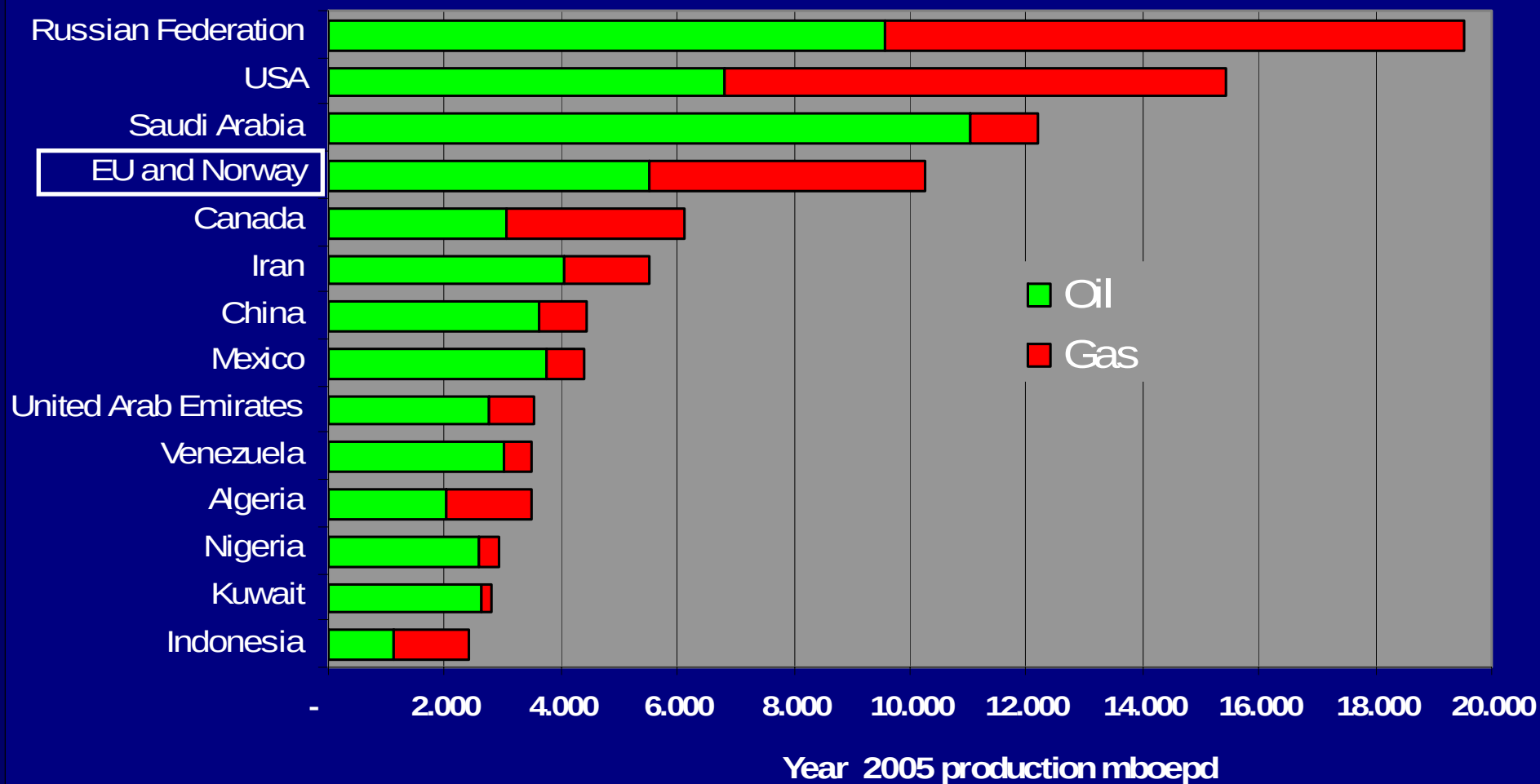


- Recovery factor up...
 - World wide currently ~ 35%
 - Increase by **1% equals 2.5 years** global energy consumption



- Technology to access unconventional oil & gas
 - Oil sands
 - Tight reservoirs
 - Difficult geography and geology

European basin – a major producer

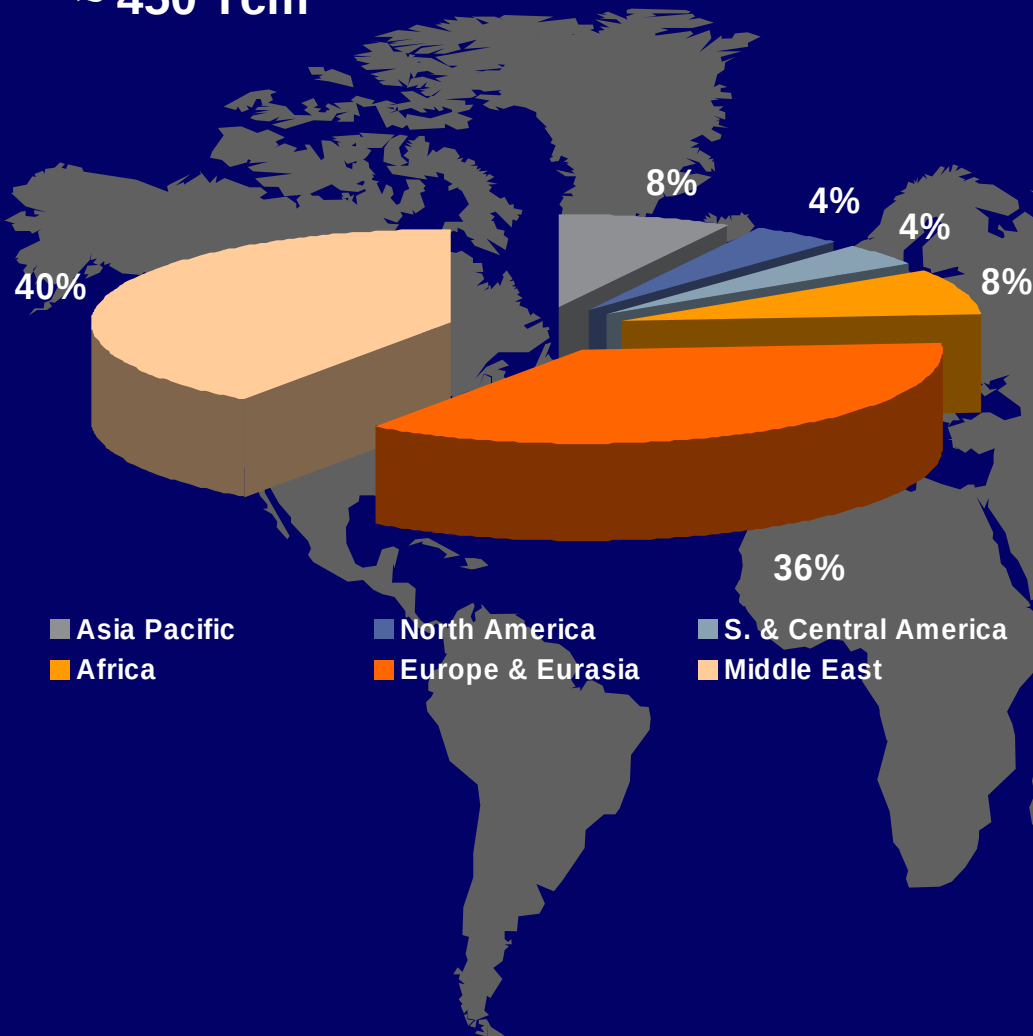


Source: BP Stat review 2006



Gas in abundance ...

Technically recoverable conventional gas:
~ 450 Tcm



■ Proven gas reserves

- 1984: 96 Tcm

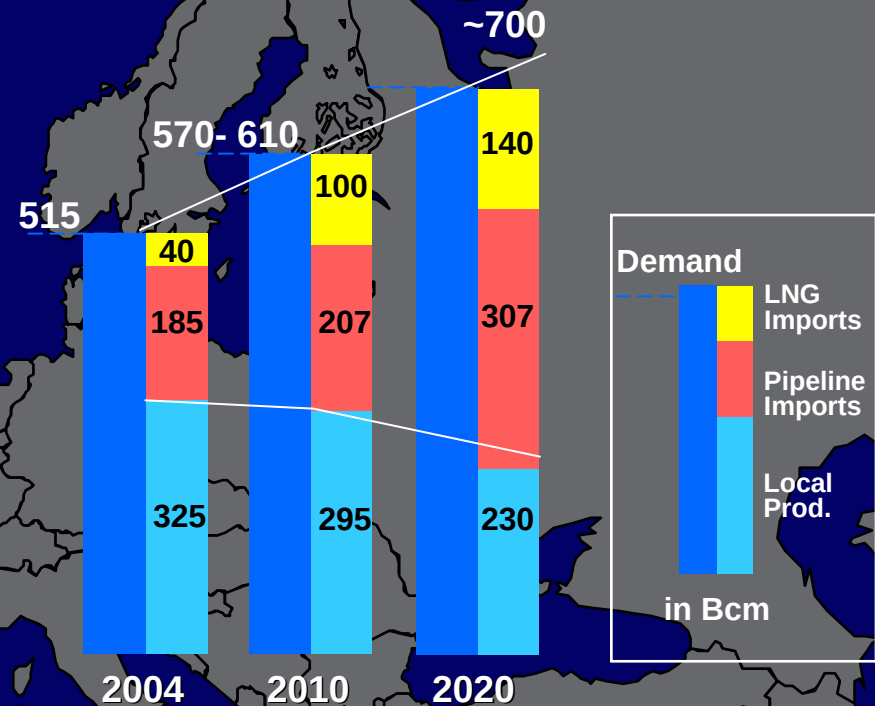
- 1994: 143 Tcm

- 2004: 180 Tcm

■ Reserves-to-production
ratio: 66.7 years

A changing gas market ...

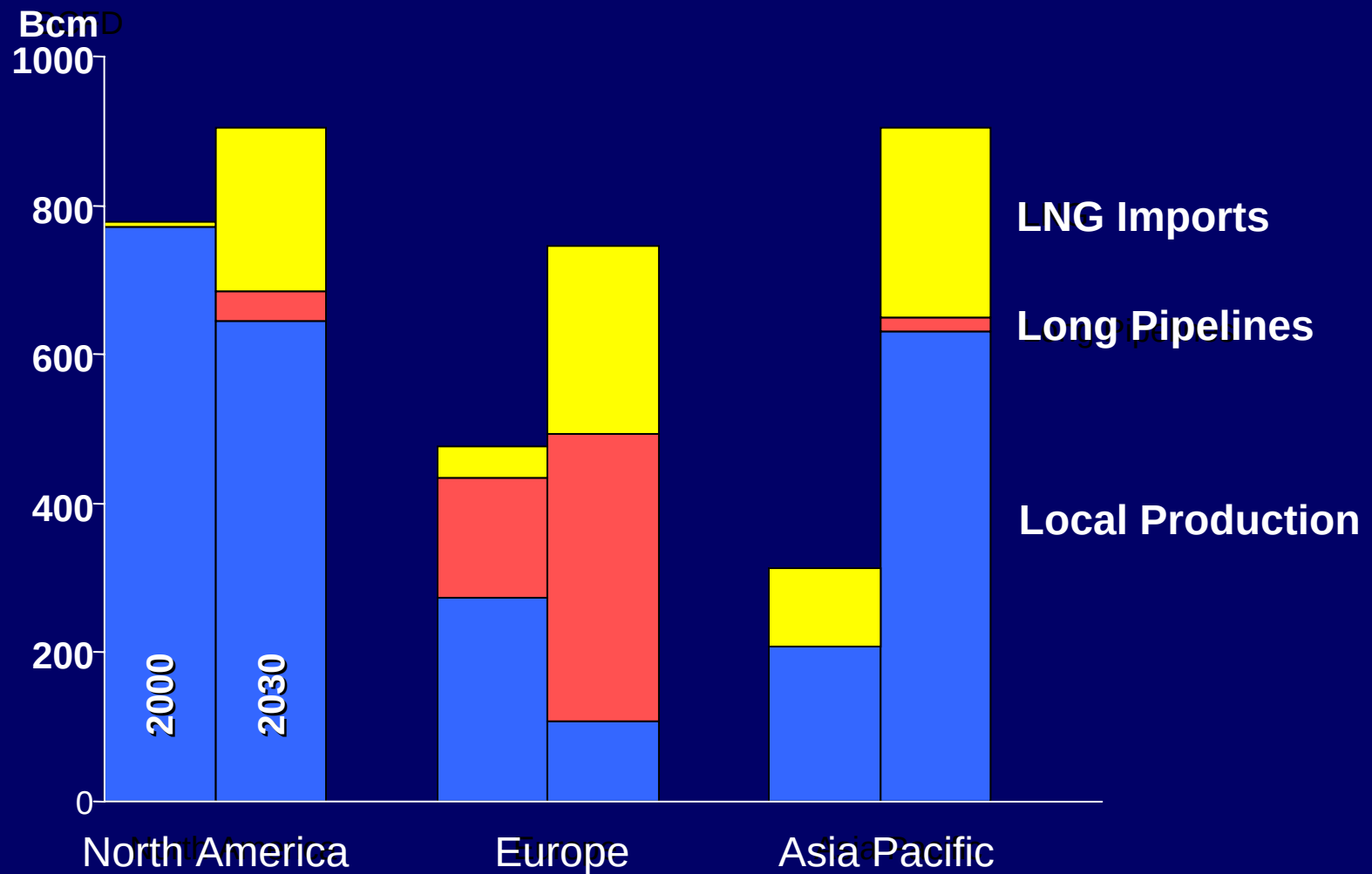
- Technology development
 - LNG competitive with pipeline gas
- US / Europe gas production decreasing
- Growing demand
- EU needs...
 - New pipeline imports
 - Much more LNG
 - Reliable gas trade



Source: Total, EON - Ruhrgas



... with growing reliance on imports

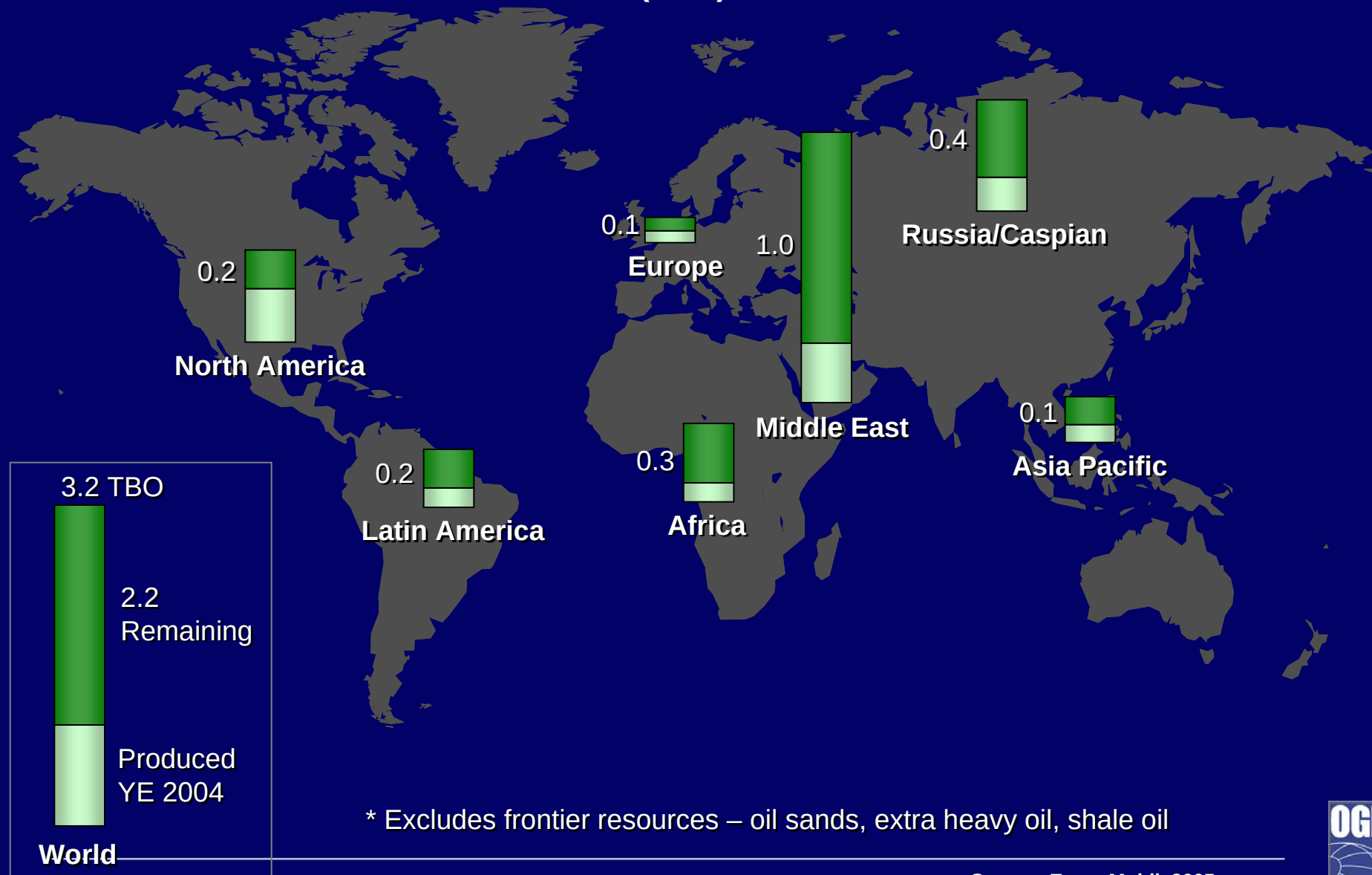


Source: ExxonMobil



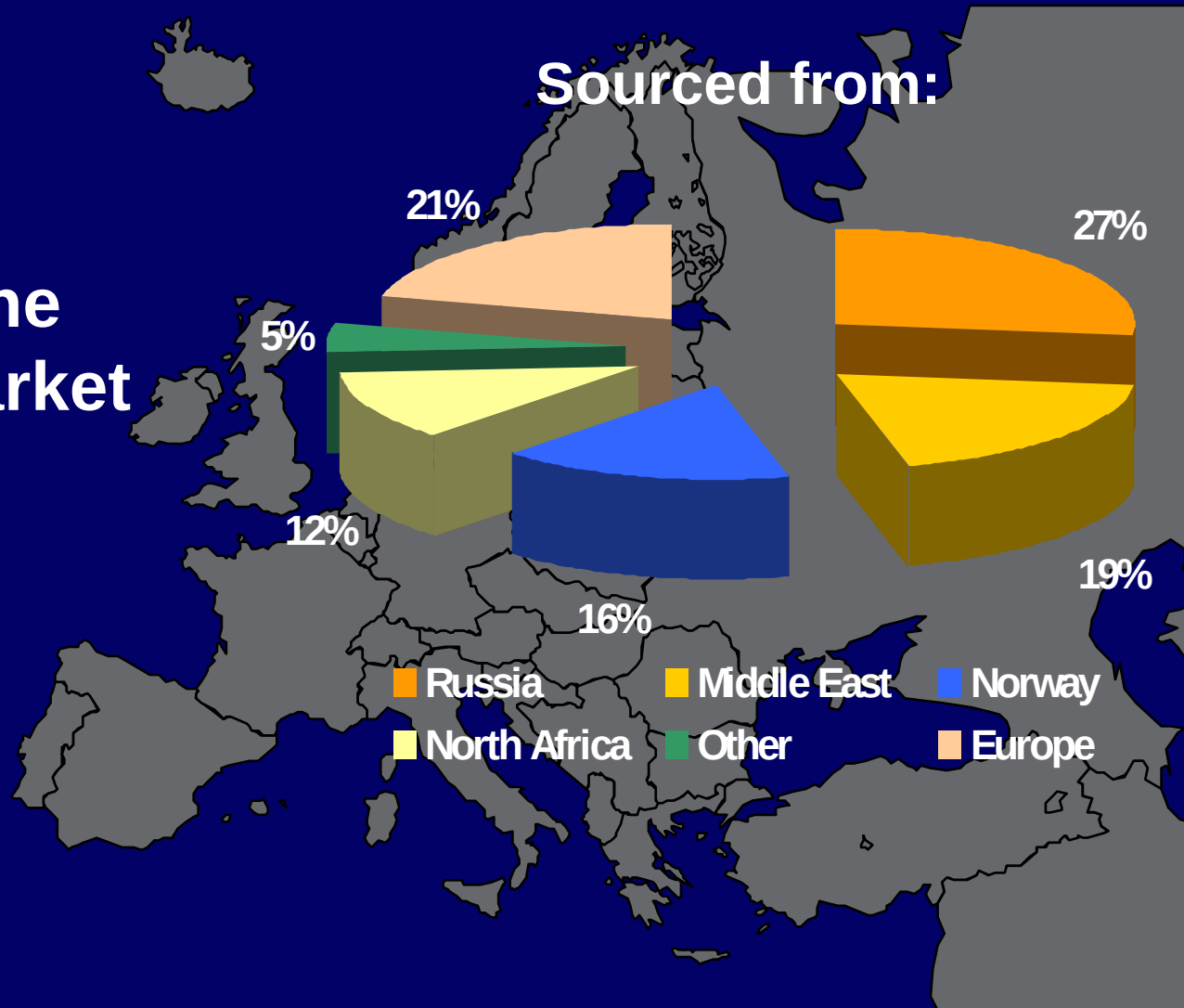
Conventional Oil Resources - 2005

Conventional* Crude and Condensate (TBO)



Security of Oil Supply for Europe ...

...an issue of the
global oil market



A changing global oil market

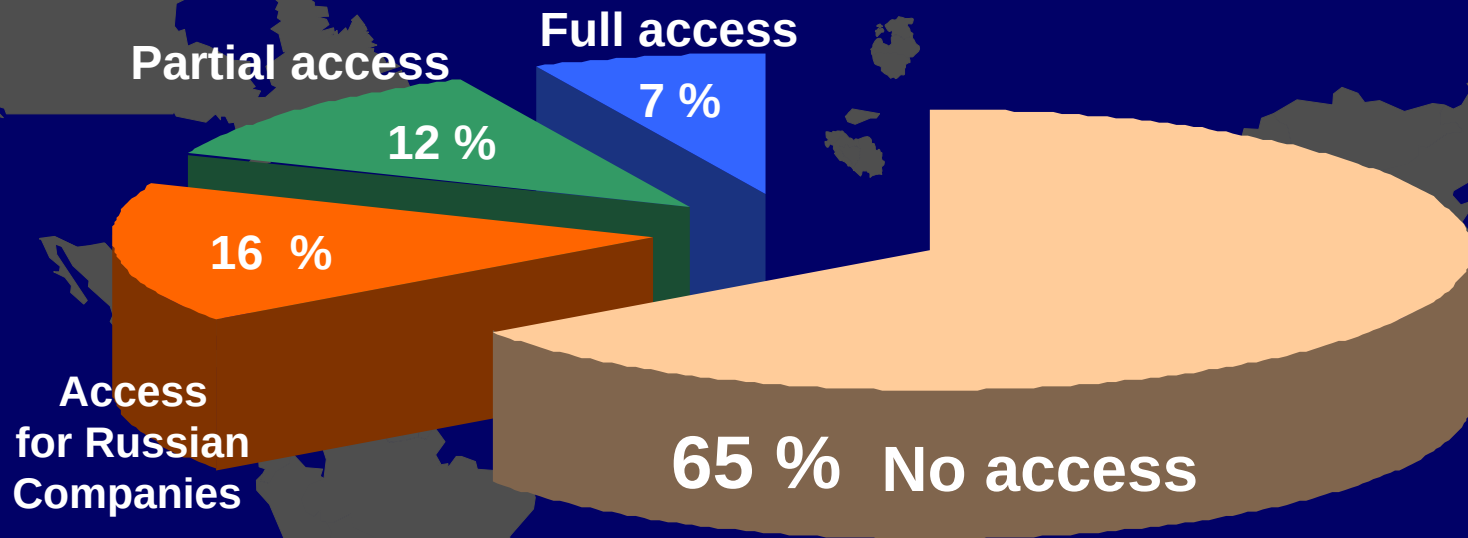
- Price and volatility
- Demand growth in developing nations
- OPEC spare capacity
- Politically triggered production losses (Iraq, Nigeria ...)

... and some challenges for IOCs:

- Limited access
- Competition for resources
- Investment and technology
- Increased political risk and government take

Access

for IOCs to global oil and gas reserves



Reserves in 2005: conventional 2250 Billion BOE

Source: ConocoPhillips, PFC Energy



New competition?

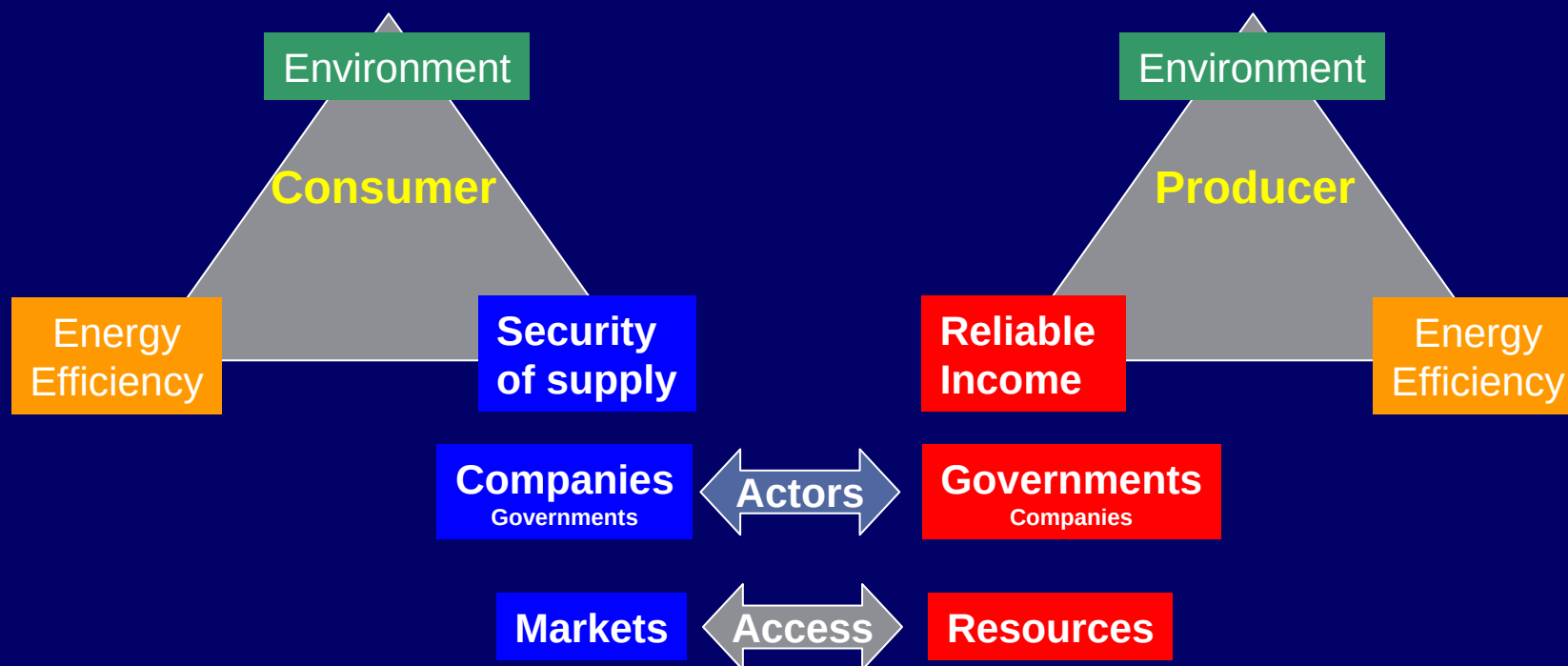
- **Chinese and Indian companies are competing for reserves**
 - Have a (government) assignment to secure energy flows ?
 - Do not have a profit motive ?

- **International Oil Companies and National Oil Companies**
 - Have to find common ground
 - NOCs need technology, management practices and investment activity, stable markets
 - IOCs need access and acceptable rates of return
 - Alignment and new business models needed

Strengthening partnerships ...

Emerging consensus:
Differing perspectives:

Environment and Energy Efficiency
Security of Supply vs Reliable Income



Understanding future supply and demand
Transparency
Getting the international framework right
Economic - financial - legal - contractual - technical

Achieving equilibrium ...

- **Functioning, competitive markets**

- Transparency, removal of barriers, non-discriminatory
- Free flow of energy trade and investments, reciprocity

- **Sound policies**

- Delivering a stable, facilitating, predictable fiscal and regulatory framework, sanctity of contracts, rule of law

- **Sharing of robust technologies**

- To develop and optimize resources through partnership

- **Responsible and efficient development**

- Environment
- Deliver economic results for growth and social well-being
- Benefits to all stakeholders

- **Energy efficiency**

- The most abundant and cheap energy we have

Thank you for your kind attention!