

IGU  
2006



# Perspectives on Worldwide Gas Supply



**George H.B. Verberg**

**President International Gas Union**

*Conference 'European Energy Supply in Times of Globalisation'*

**Cologne, 13 September 2005**





# INTERNATIONAL GAS UNION

Covers >95 % of World Gas Sales  
'Spokesman' of the Gas Industry



[www.IGU.org](http://www.IGU.org)



Non Members



Membership from 67 countries and 20 Associated Members

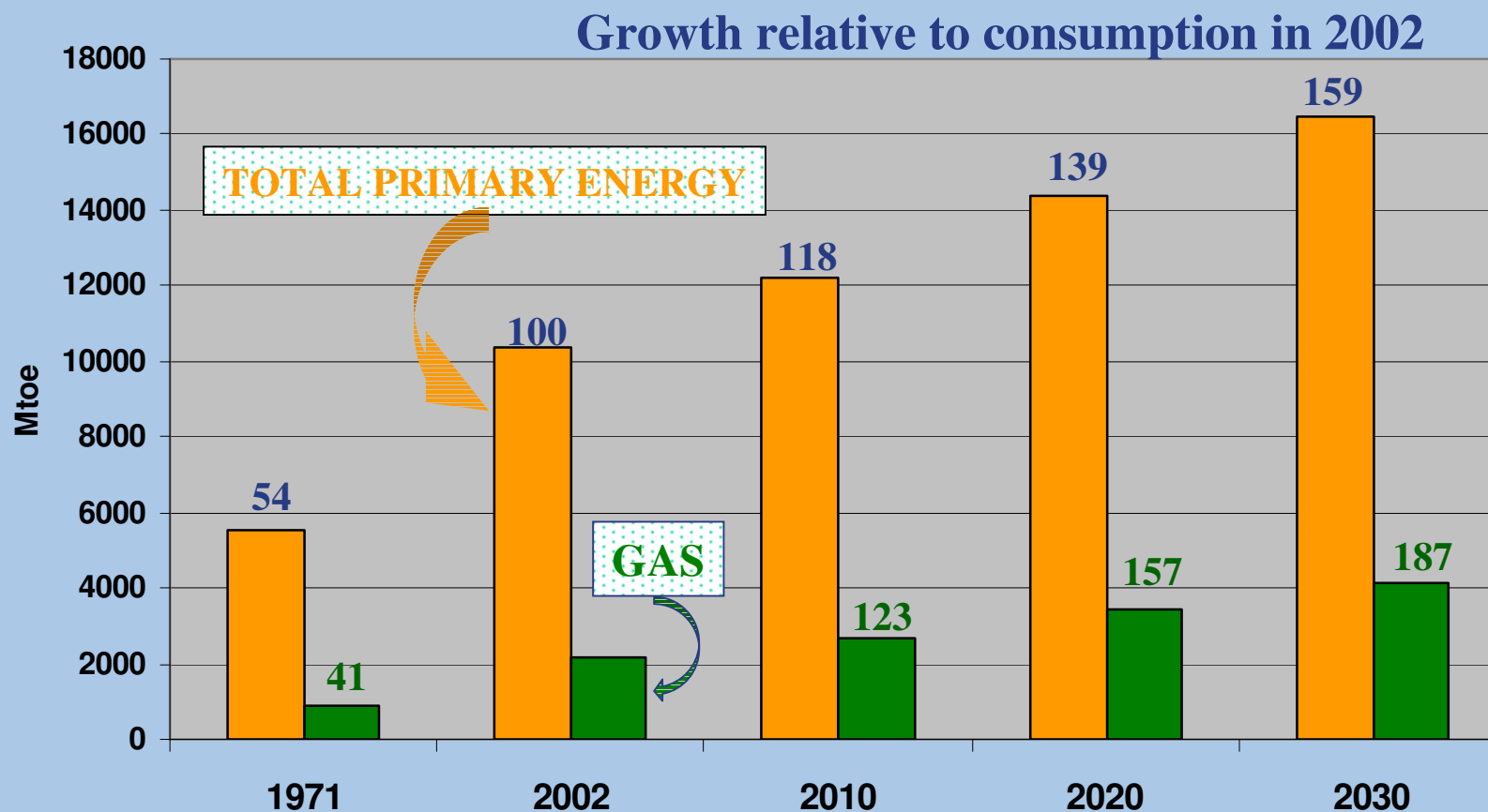


# IGU's role and objectives

- **Gas as the fuel of choice preceding a sustainable energy system**
- **Promotion of the gas industry as a responsible corporate citizen**
- **Promotion of technology, industry and customer focus**
  - » **Gas: powers the people,**
  - » **preserves the world,**
  - » **promoted by IGU**



# Global Energy Demand Forecast IEA WEO 2004





# Not That Long Ago.....:The Gas Industry Started To Serve The Customer!

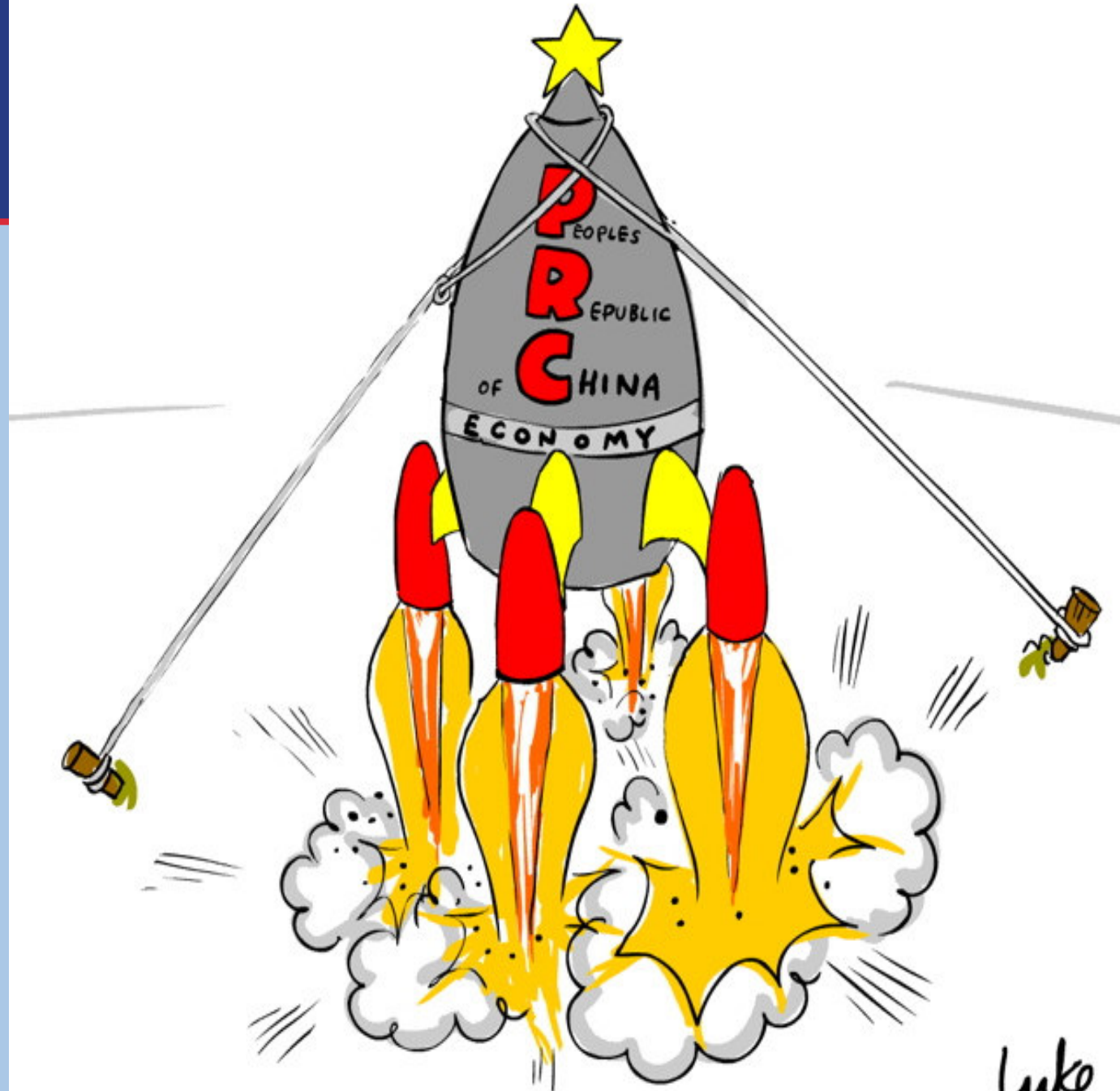
There is a Keen Local Interest  
in Promoting Gas Usage



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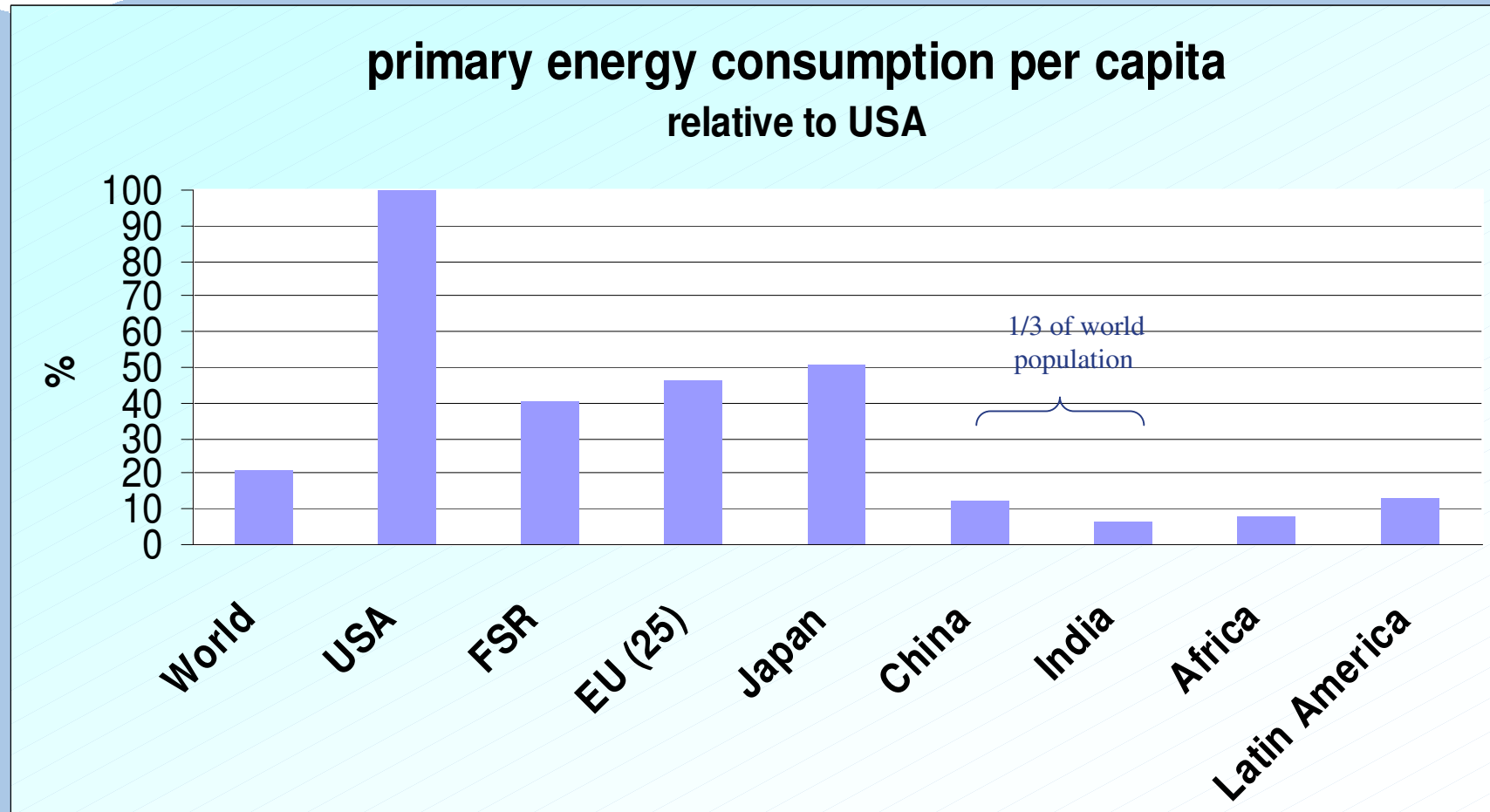
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# Energy consumption in perspective

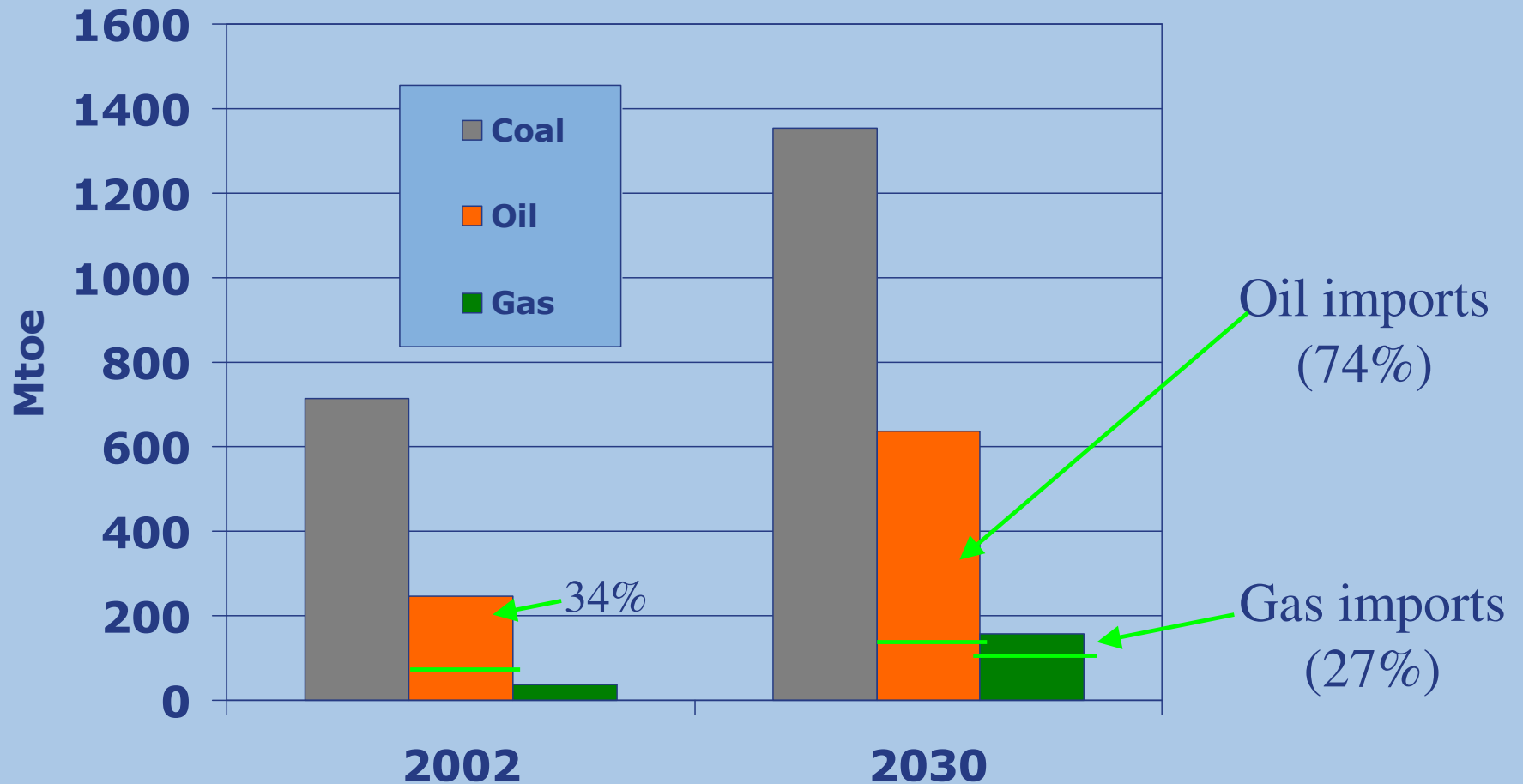


IEA data year 2002



# China hydrocarbon demand

Chinese gas demand of limited impact globally?

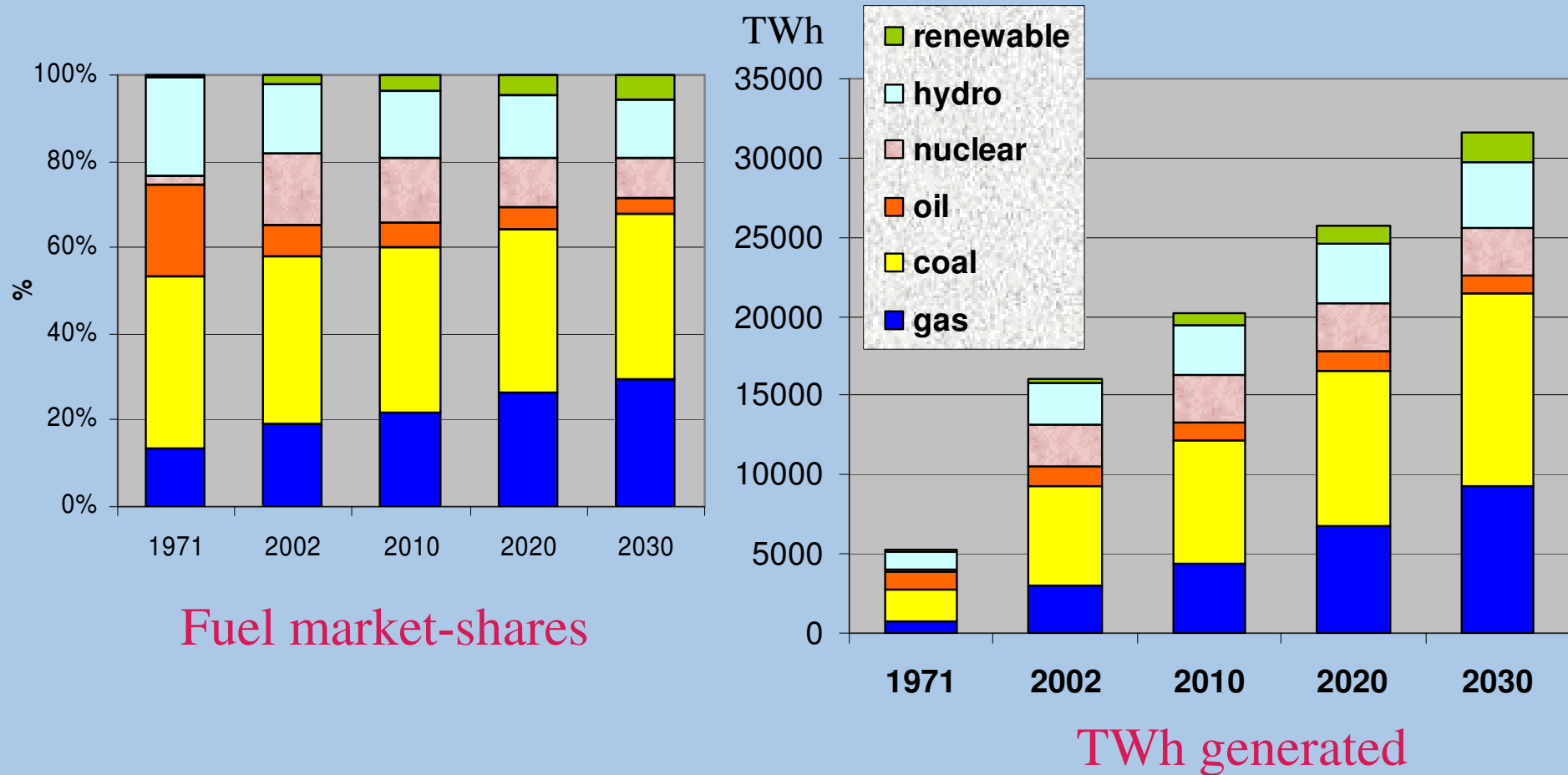


Source: IEA WEO 2004





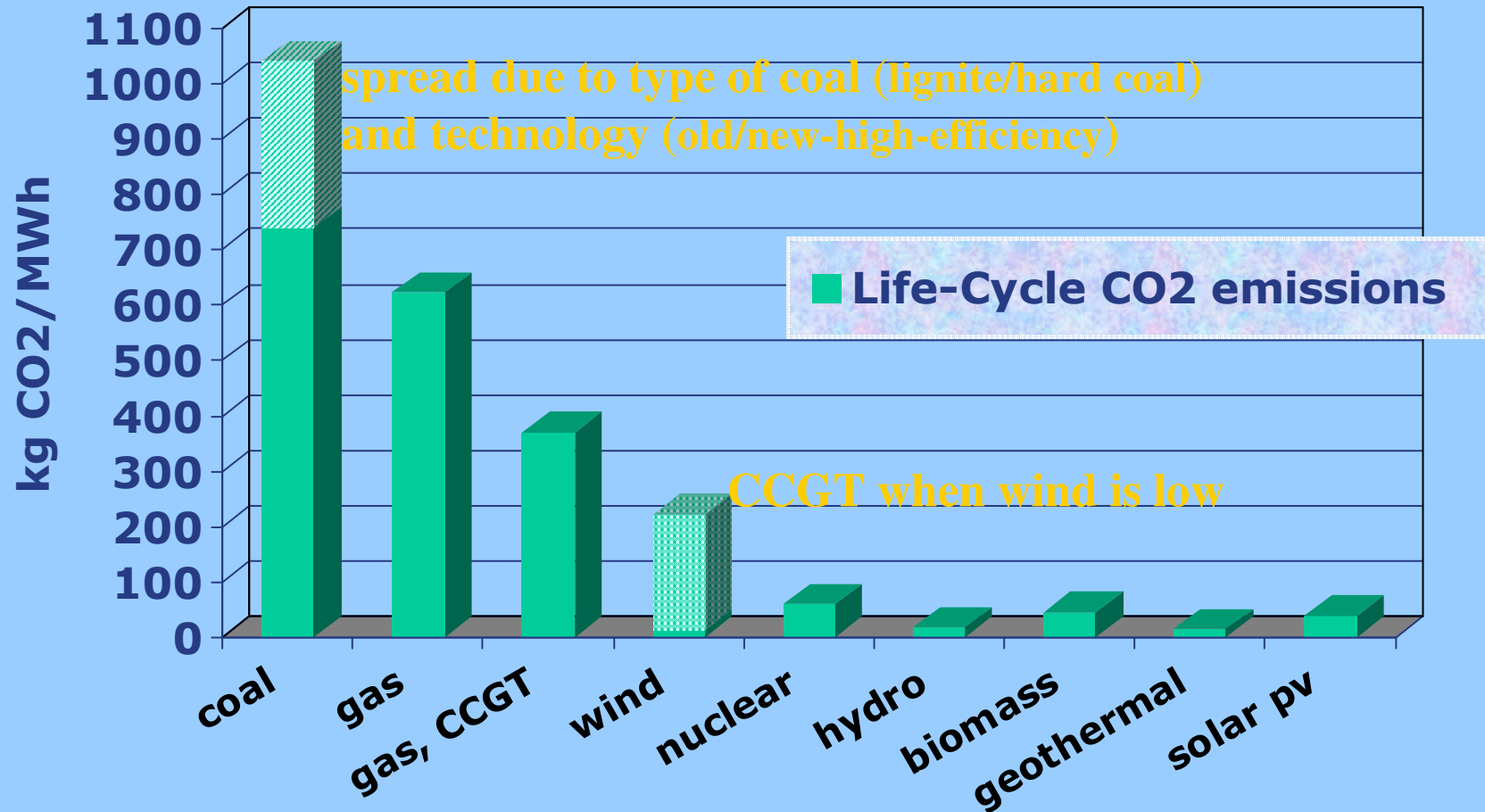
# Power generation (global)



data: IEA weo 2004



# CO<sub>2</sub> emission from power plants

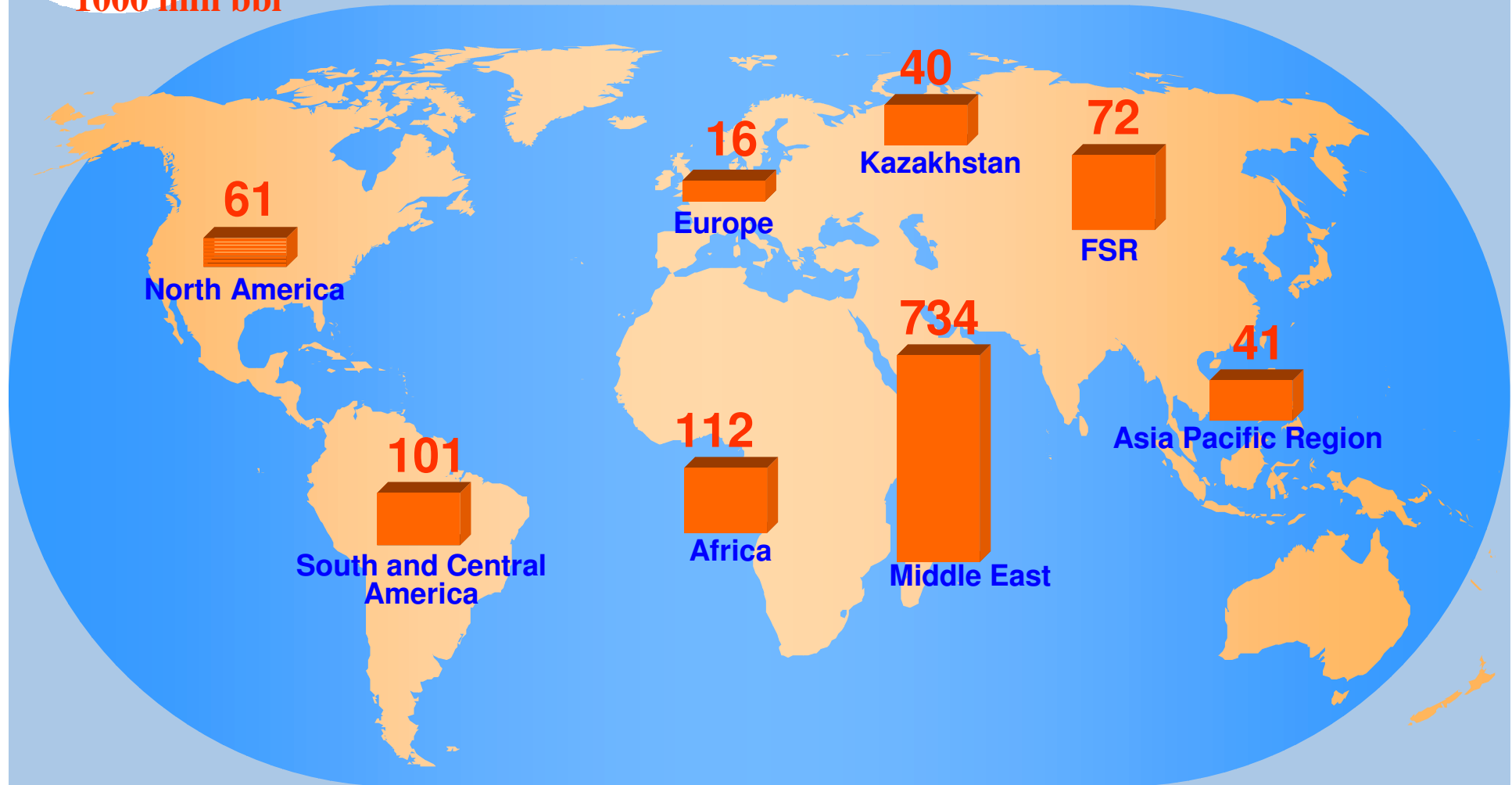


Sources: life-cycle assessment of electricity generation systems and applications for climate change policy analysis, Meier, 2002, published on website Nuclear Energy Institute; own data; IEA



# Proven world oil reserves 1.188.000 million barrels R/P ratio ~40 years

1000 mln bbl



Data: BP Statistical Review 2005

09-09-2005

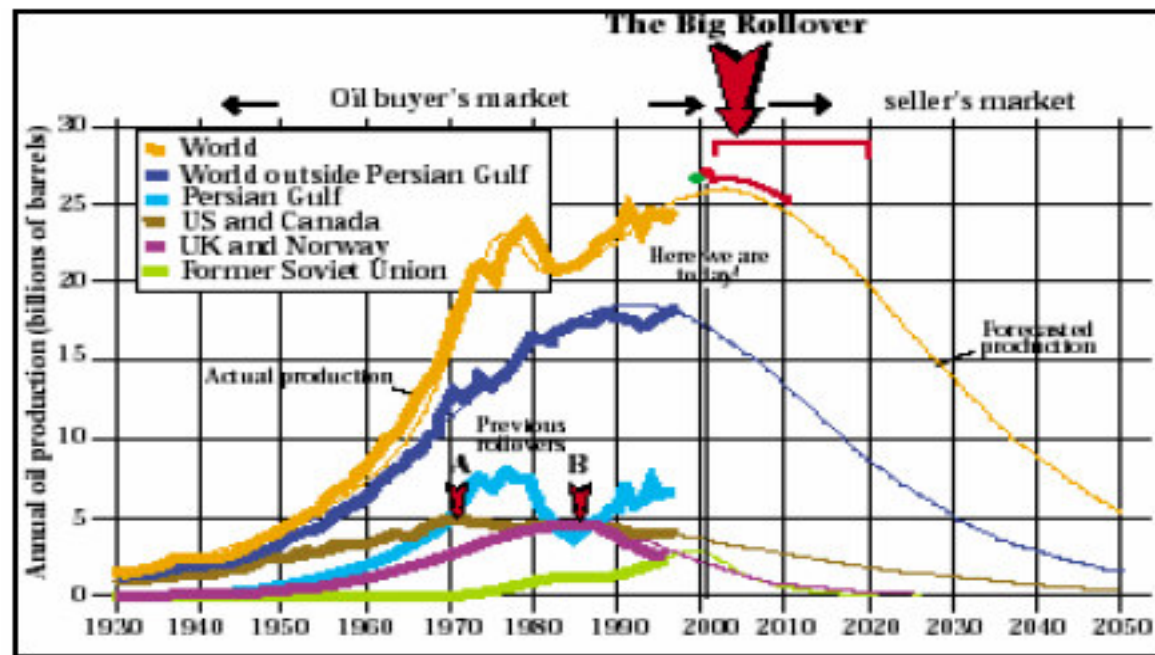
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11

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# How much oil is left ?



Year of The Big Rollover	Forecaster
2003	Campbell, 1998
2004	Bartlett, 2000
2007	Duncan and Youngquist, 1999
2019	Bartlett, 2000
2020	Edwards, 1997
2010-2020	International Energy Agency, 1998

Source: presentation by Tony Dammer  
at EIA Midterm Energy Outlook Conference, April 12 2005



# Tar sands (bituminous sand) to enhance oil production?

## Presumed oil in place:

- **Alberta, Canada: 1.7 trillion barrels**
- **Orinoco basin, Venezuela: 1.8 tr bbl**  
(global proven oil reserves 1.2 tr bbl –BP)
- **10-15% recoverable?**
- **steam injection to release high viscous oil requires heating, by natural gas (energetically ~ 1 bbl to 5 bbl produced)**
- **Chinese interest in expansion of Canadian mining (Sinopec) and Venezuelan orimulsion (Sinoven)**





# Proven world coal reserves > 900.000 million ton R/P ratio ~ 164 years

1000 mln ton



Data: BP Statistical Review 2005

09-09-2005

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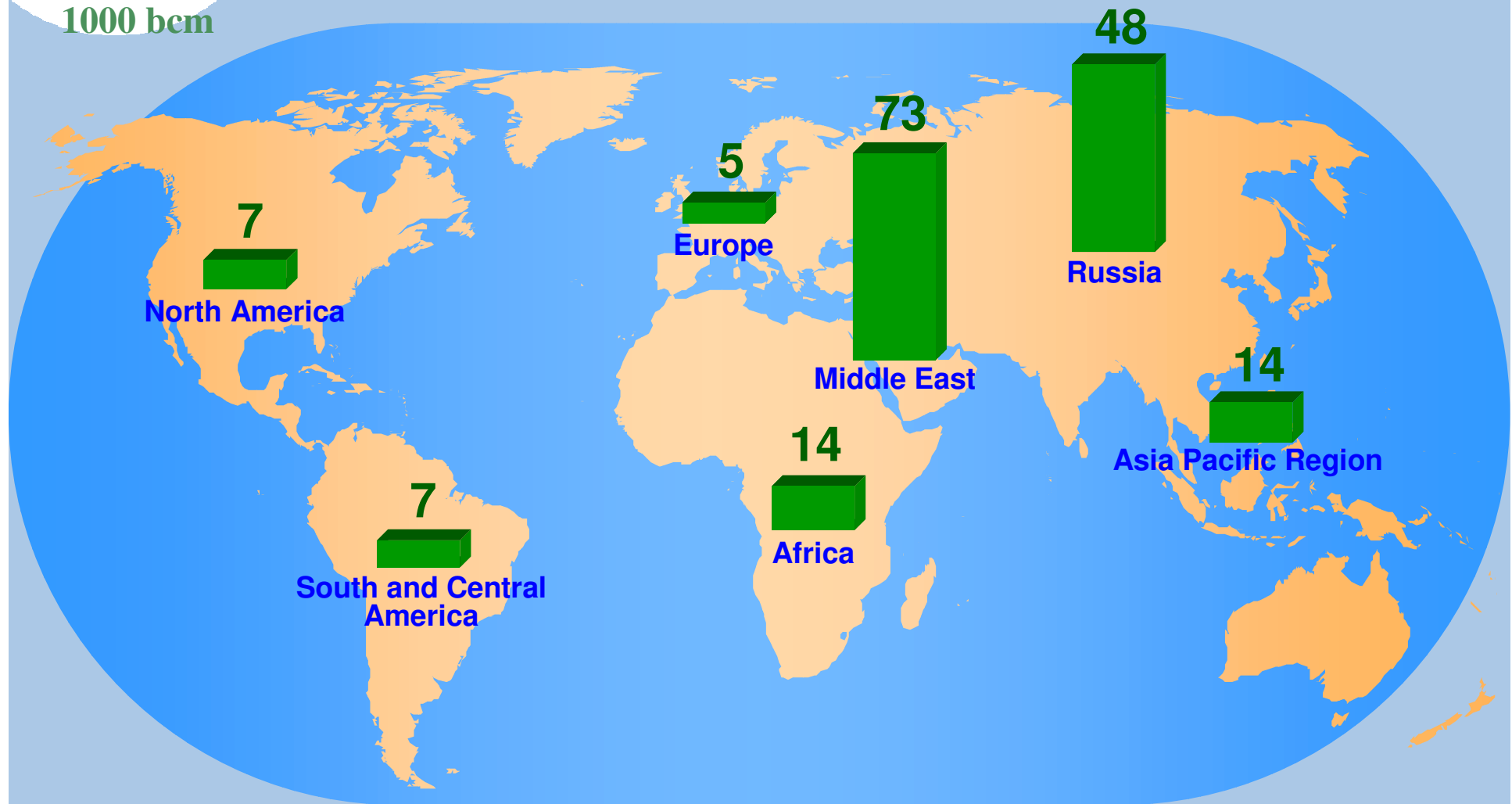
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# Proven world gas reserves 180 trillion cm R/P ratio ~66 years

1000 bcm



Data: BP Statistical Review 2005

09-09-2005

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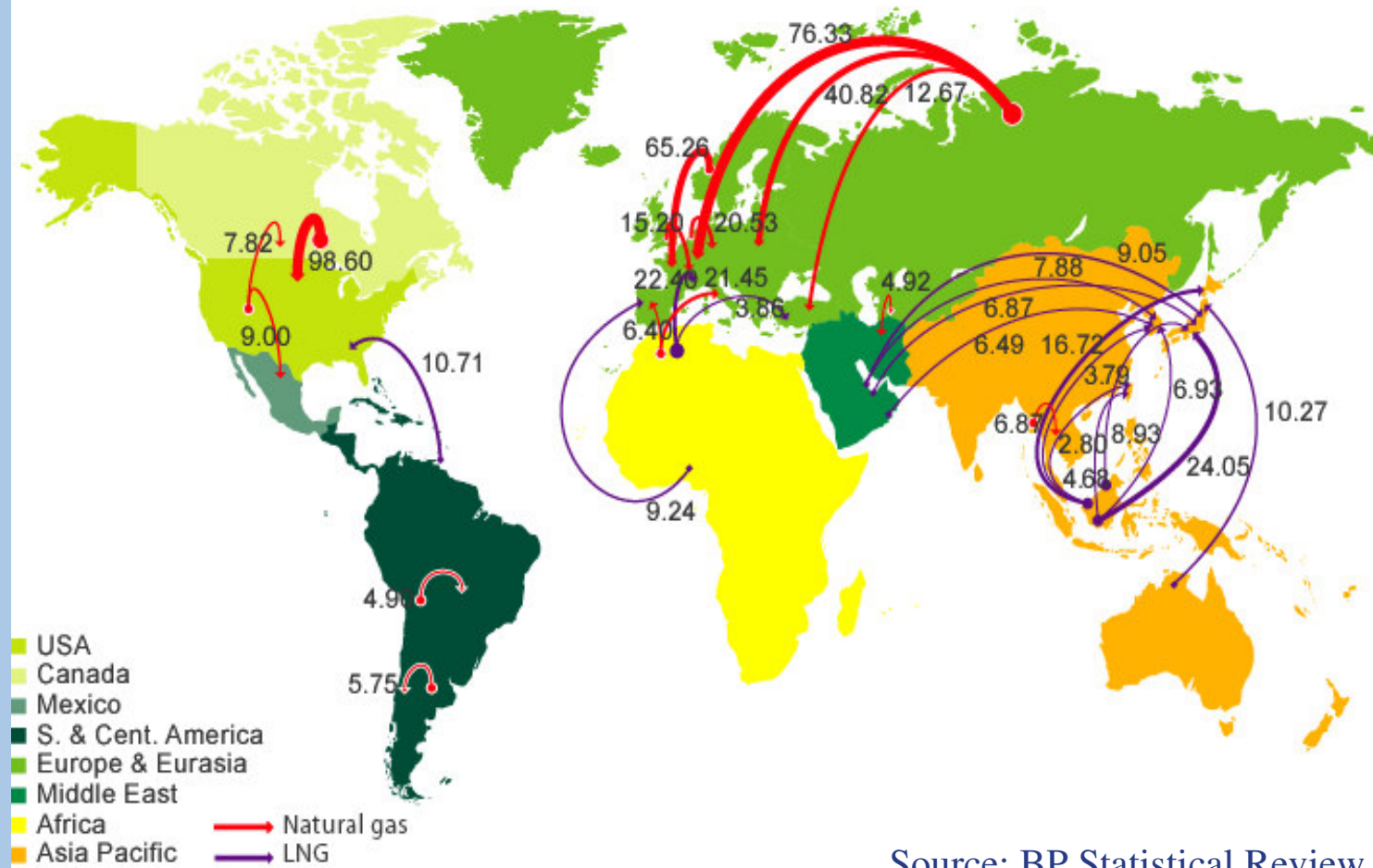
15

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# Major natural gas trade movements at the start of the 21<sup>st</sup> century

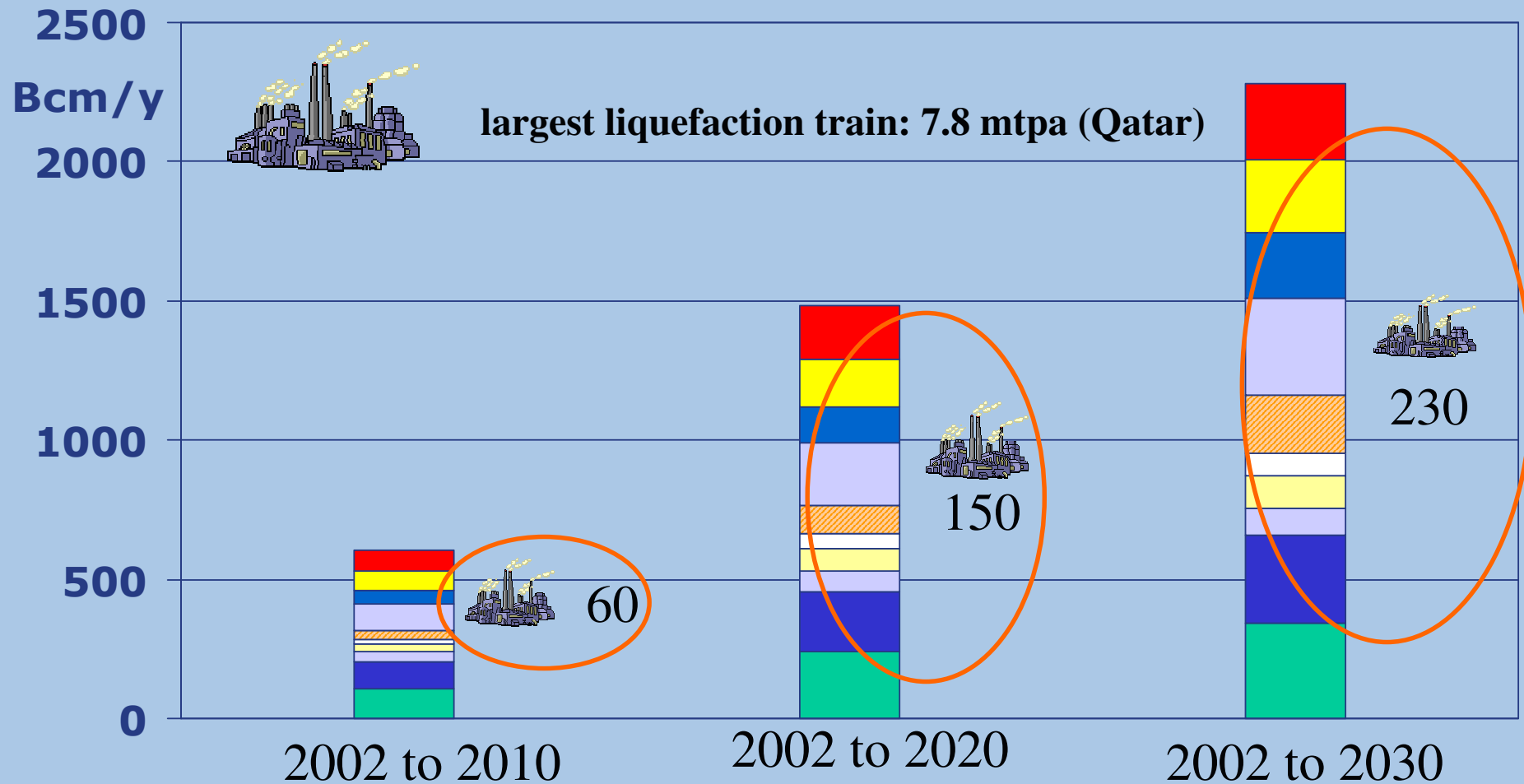
Trade flows worldwide (billion cubic metres)



Source: BP Statistical Review 2004

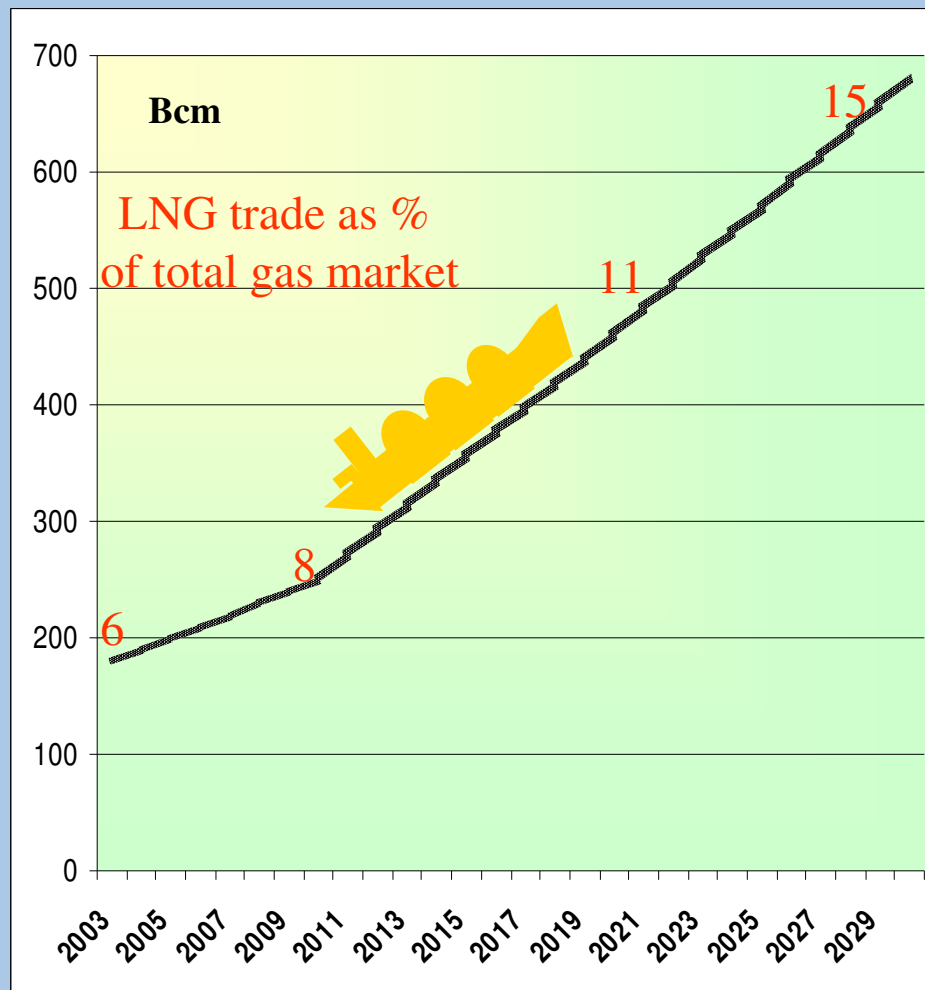
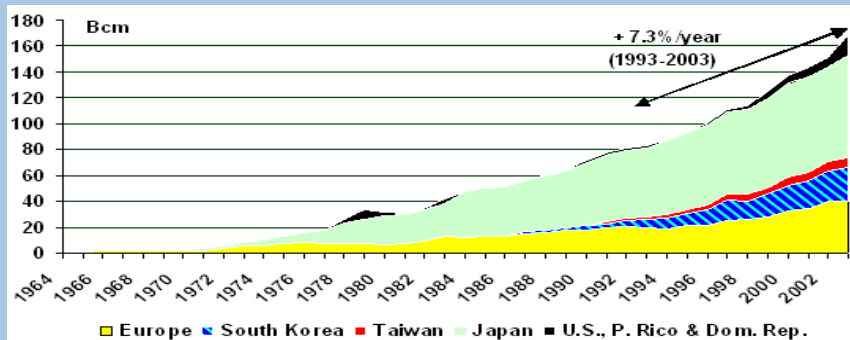


# Incremental Global Gas Demand: room for more production capacity





# LNG trade history and perspectives



**Forecast (IEA weo 2004)**

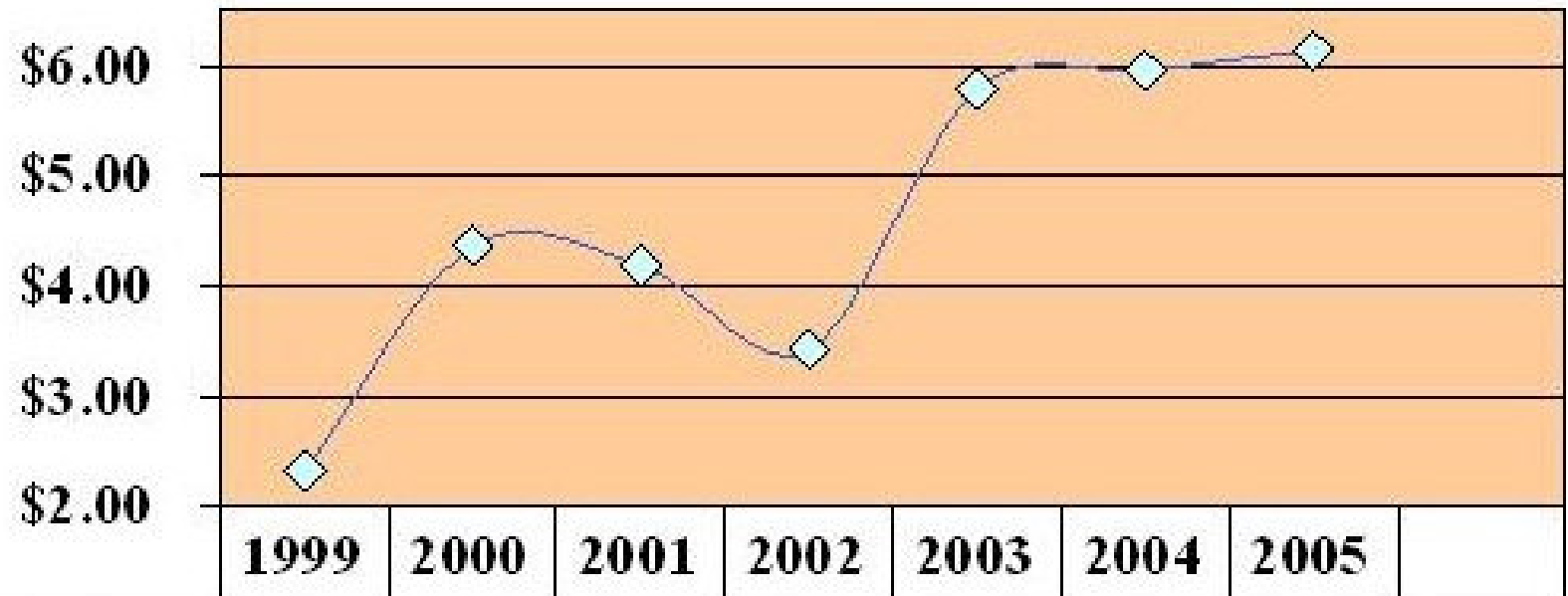
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# Natural Gas Spot Prices USA

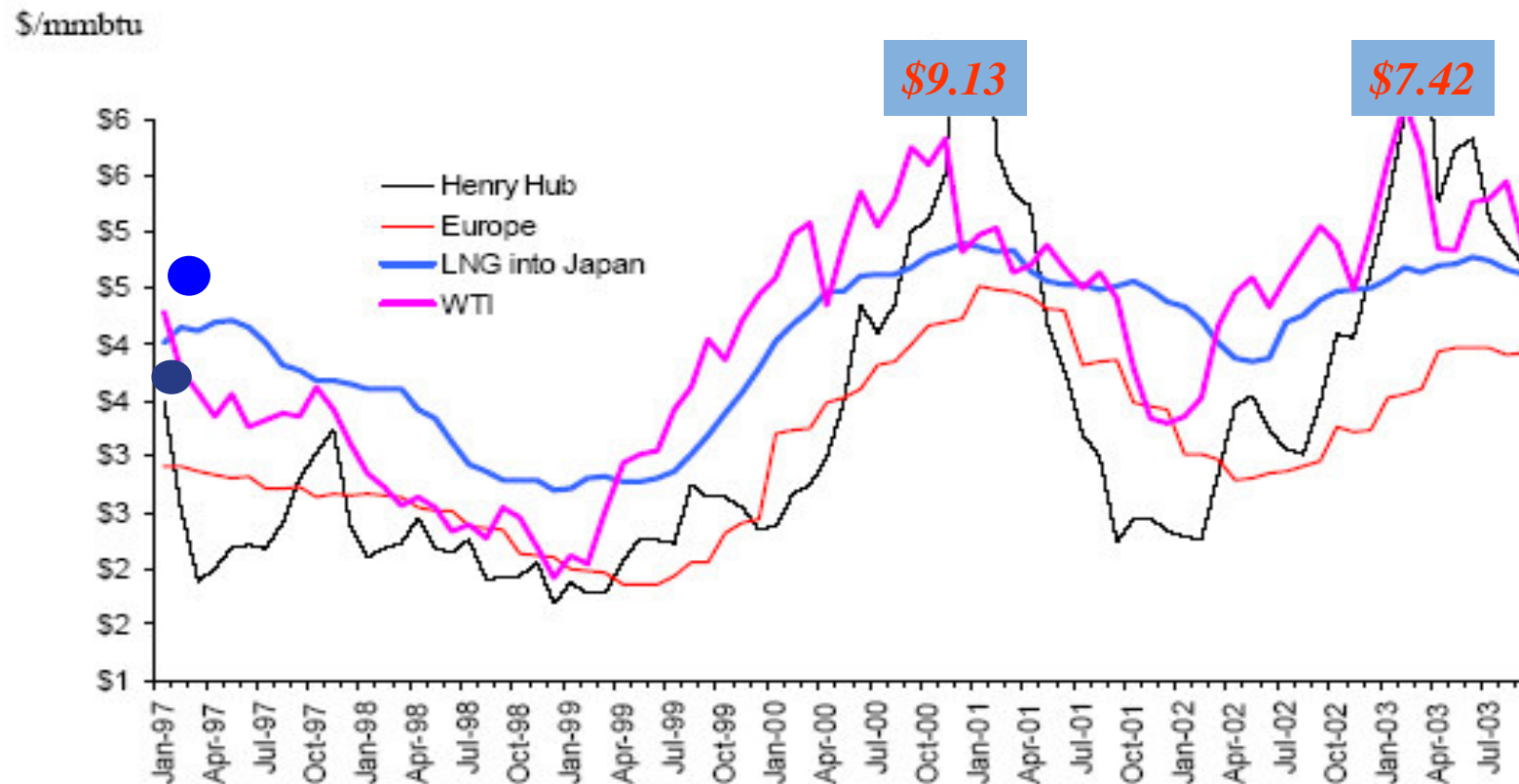
Natural Gas Spot Prices Have Risen and Fluctuated Since 1990s



◆ Dollars per cubic foot	1999	2000	2001	2002	2003	2004	2005	
	\$2.33	4.37	4.19	3.43	5.8	5.96	6.14	



## The price gap ; Henry Hub vs. LNG into Japan; oil and gas prices remain highly correlated



Source : *The future relationship between LNG pricing In the Asia-Pacific and the Atlantic-Mediterranean, PFC Energy*



# Natural gas' global business environment: oil prices

## Oil prices in US\$ of 2004:

- **1864: 92 \$/b, but at that time no oil dependent economy**
- **1980: 81 \$/b, economic difficulties**
- **2004: 55 \$/b**
- **2005: 60+ \$/b**
- **Expected: restraints in refinery capacity lifted by 2008**



# International LNG trade: connecting markets





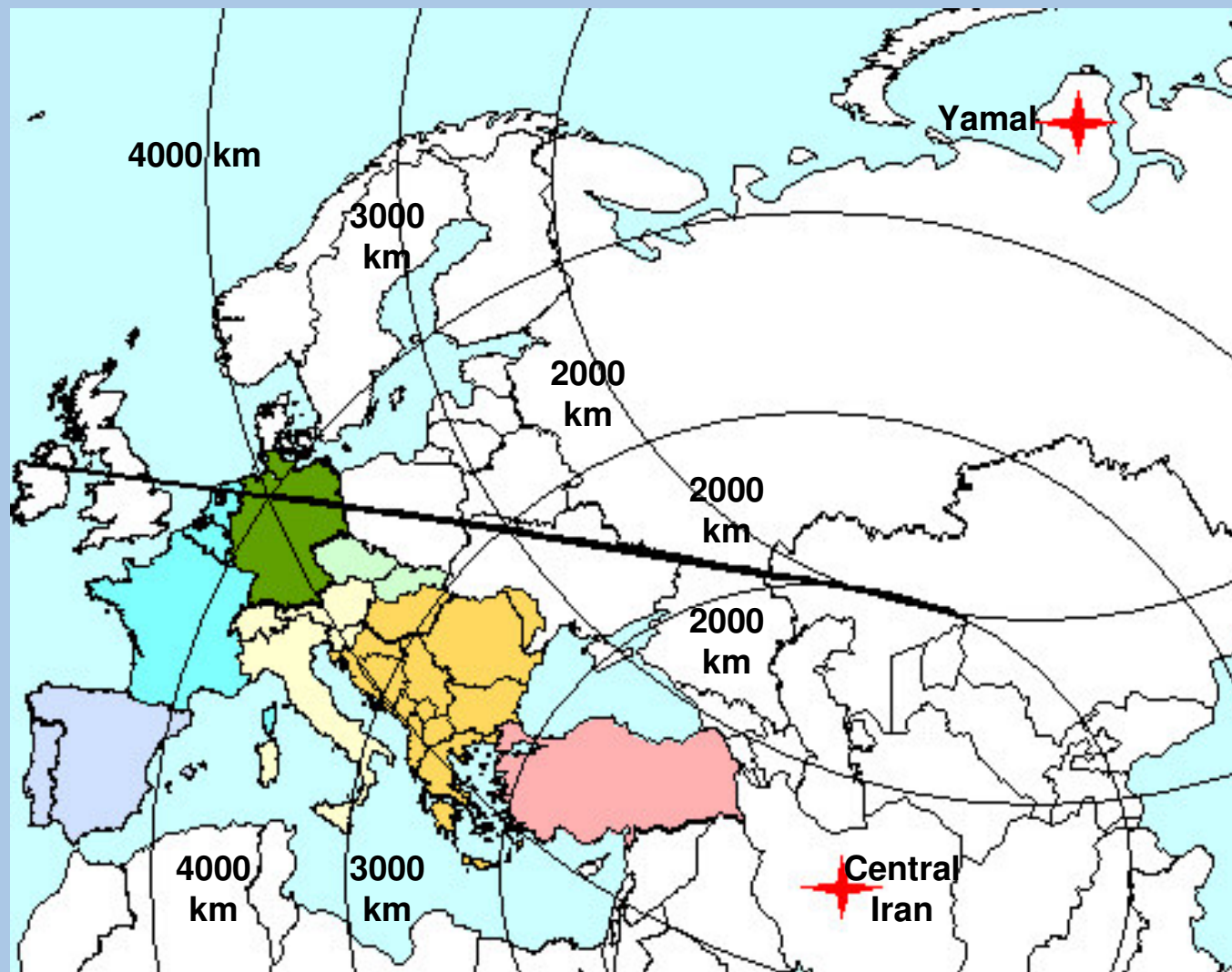
## Conclusions (global competition)

- **Price levels of natural gas in the different gas regions are so high that LNG is competitive wherever it originates from**
- **Traditional gas supply patterns (Russian gas to Europe, Mid Eastern gas to Pacific Rim, North America autarkic) will give way**
- **The big gas demand regions will compete with each other for supplies.**



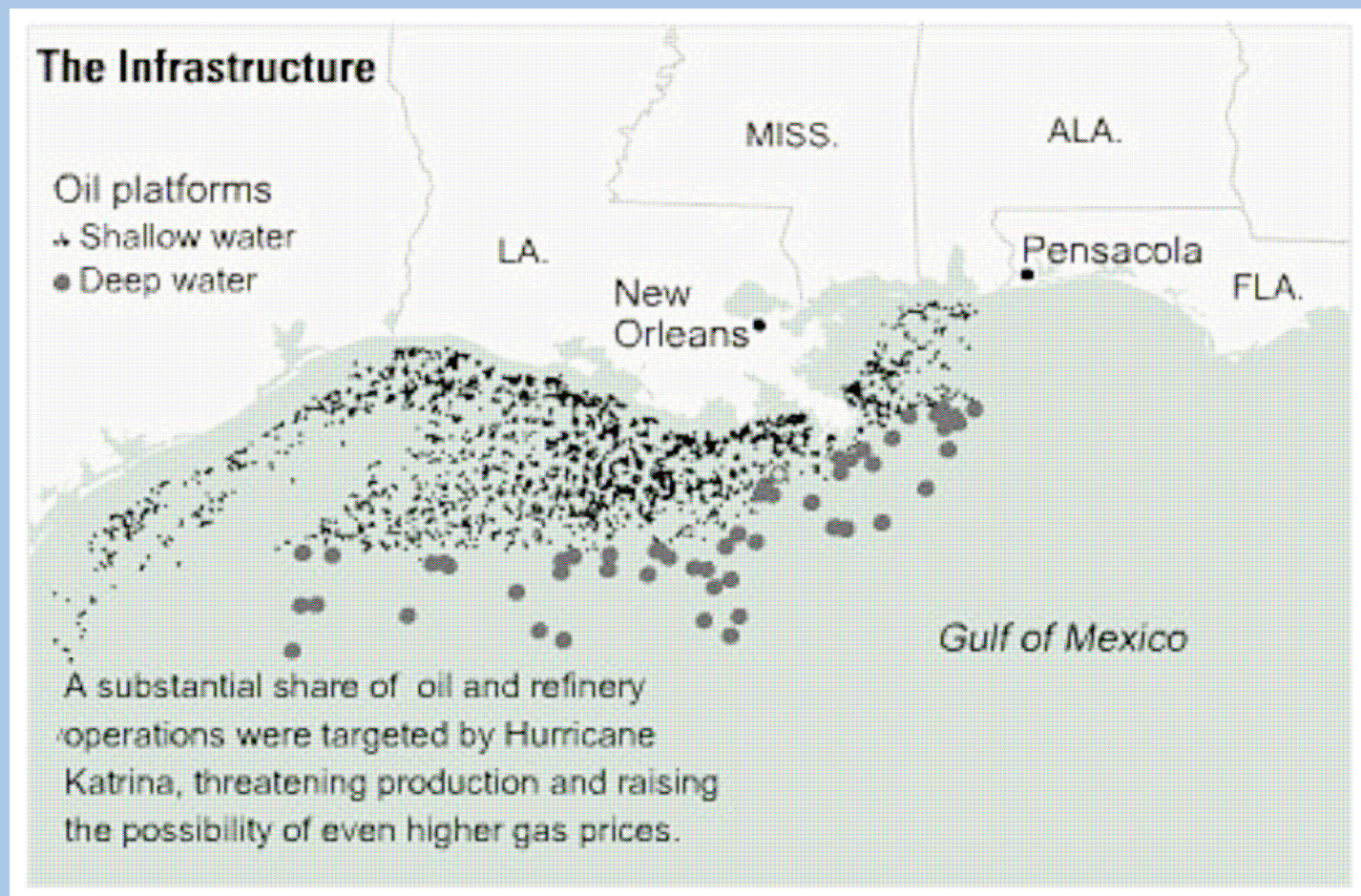


# How to diversify further in Europe ?!





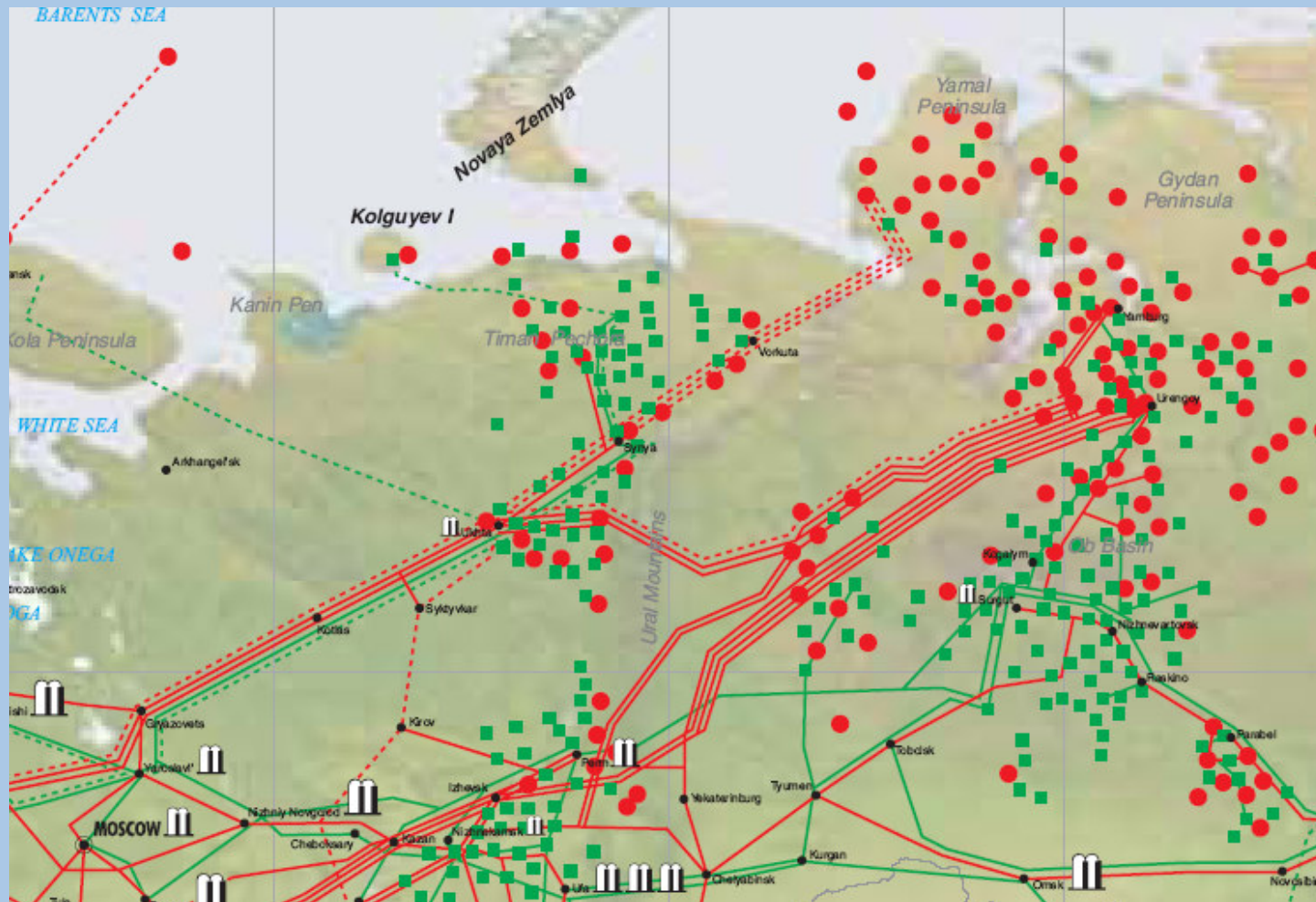
# Key Energy Region nr.1: Risk : Tornado's







# Key Energy Region nr.2: Risk : Melting Permafrost



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# Key Energy Region nr.3: Risk : Political Situation





# Several Key Straits : Risks : Overloading and Terrorism

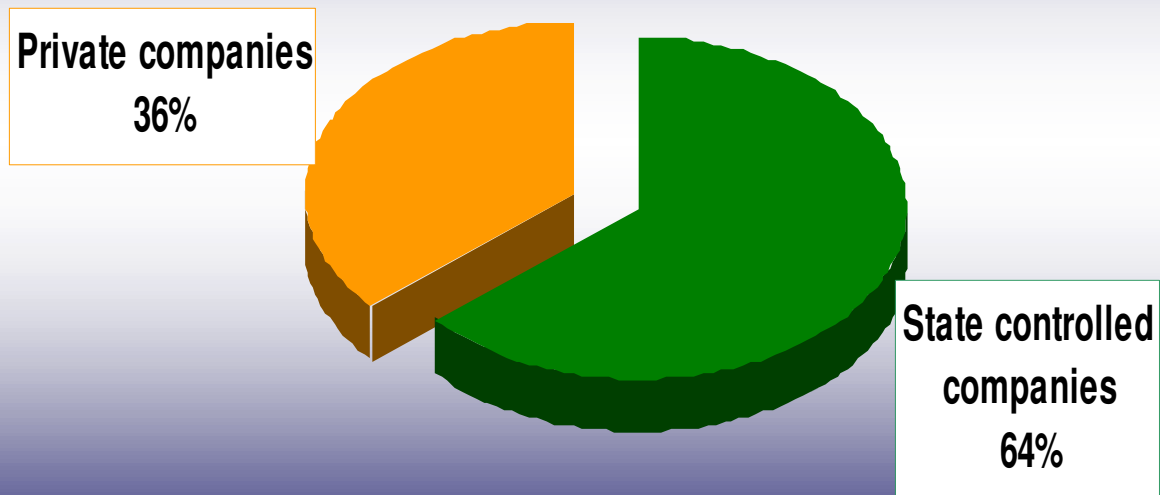






# Who owns the gas (and oil) reserves?

## CONTROL OVER PRODUCTION OF REMAINING COMMERCIAL RESERVES NATURAL GAS





## **May 3 2005: IEA warns for shortfall of investments in energy**

- **Global investment remained below the IEA's 2003 estimate of the \$16.000bn needed by 2030 to meet demand**
- **Lehman Brothers / Citybank predict investments in exploration will rise by less than 6% in 2005 against 12% in 2004**
- **Mandil's (IEA, Oct.2004): "wouldn't it be better if Oil Cie's would invest more instead of executing shares buy back schemes" could well be a symptom of these difficulties.**



## Share buy back schemes (sources: annual reports)

- **ExxonMobil: \$24 bln since 1999 merger, reducing shares outstanding by over 8%**
- **Shell: since start 2001 62.5 mln shares cancelled; €4 bln + BP 1,5 bln**
- **BP: \$7.5 bln in 2004, since 2000 \$13.5 bln**
- **Chevron: common stock buy back program of up to \$5 bln by 2007; at the end of 2004 more than \$ 2 bln repurchased**
- **Total: 2000-2004 more than 17% of capital bought back (~€ 17 bln)**

**Total for these 5 oil-majors: ~70 bln US\$**



# Alternative spending of repurchase amounts ??

**70 bln dollars**

- **3.5 mln bbl/d oil production**
- **or 120 bln m<sup>3</sup>/y gas production**

**with dept/equity 25/75 a production capacity could be build of:**

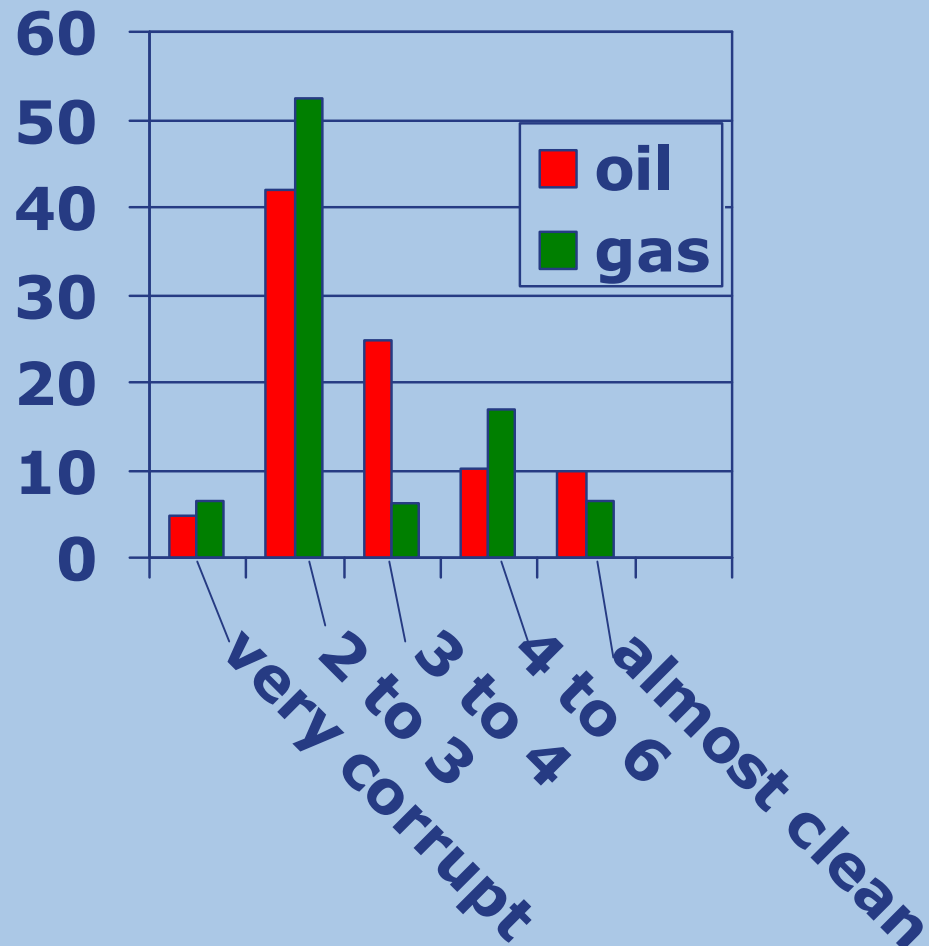
- **4.7 mln bbl/d**
- **or 160 bln m<sup>3</sup>/y**



# Corruption and bribery versus oil and gas reserves

- **Corruption index (by Transparency International) ranks countries' degree of corruption among public officials and politicians.**
- **0 = highly corrupt**
- **10 = clean**

% of proven oil/gas reserves (BP)





## Global trends (1)

- **Fuel demand increases steadily: population growth, economic development**
  - emerging economies grow fast (e.g. India, China)
- **Gas is a relatively low CO<sub>2</sub> emitter and this intensifies gas demand (Kyoto)**
  - particularly in power sector
- **New gas fields are in remote area's and require long distance transport**
  - New supply projects are technically and geopolitical more complex and more expensive



## Global trends (2)

- **LNG projects introduce possibility for global gas trade, like oil**
  - LNG market still small (6,5% of gas is traded as LNG, 17% through pipelines, most gas is produced and consumed within national borders)
  - many large projects in execution phase
- **Markets develop to more competition and short-term contracts, regulation sets pace**
  - Rise in commercial insecurity

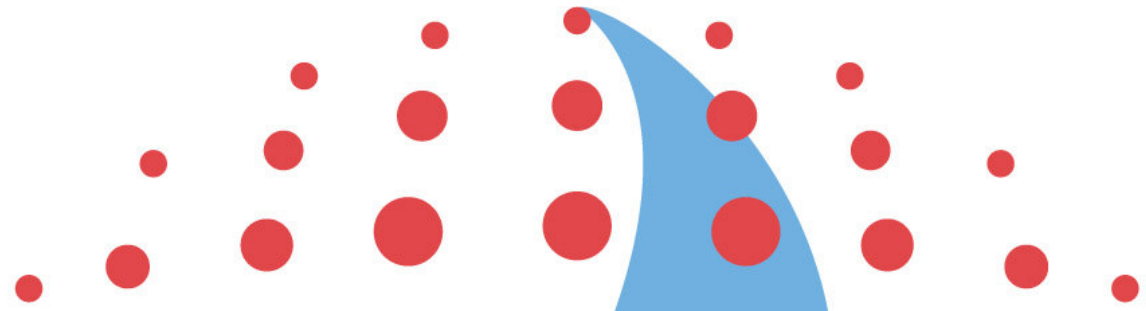




# As a responsible industry we acknowledge:

- **The best supply is the saved m3**

2006  
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**Thank you  
for your attention**



**See you in Amsterdam!  
23<sup>rd</sup> World Gas Conference and  
Exhibition  
June 5 – 9 2006**

