

The Supply, Demand and Pricing Outlook in Western European Gas Markets

George H.B. Verberg
President International Gas Union

British Energy Association Seminar
"Where are Energy Prices Going?"
London, 8 November 2005



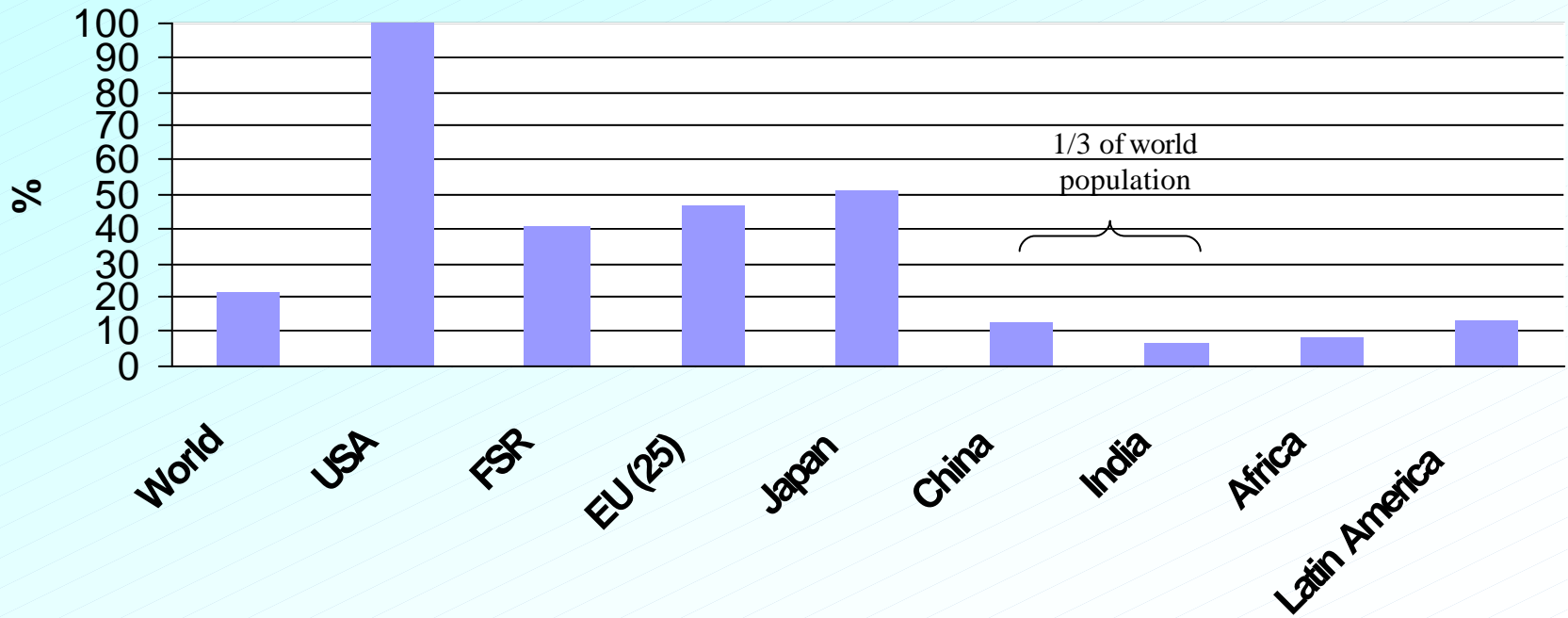
Themes for Today

- **The World needs Energy, so does Europe**
- **LNG changes Global Gas Scene**
- **Issues Influencing Pricing**
- **Energy At What Prices?**



Energy Consumption in Perspective

primary energy consumption per capita
relative to USA

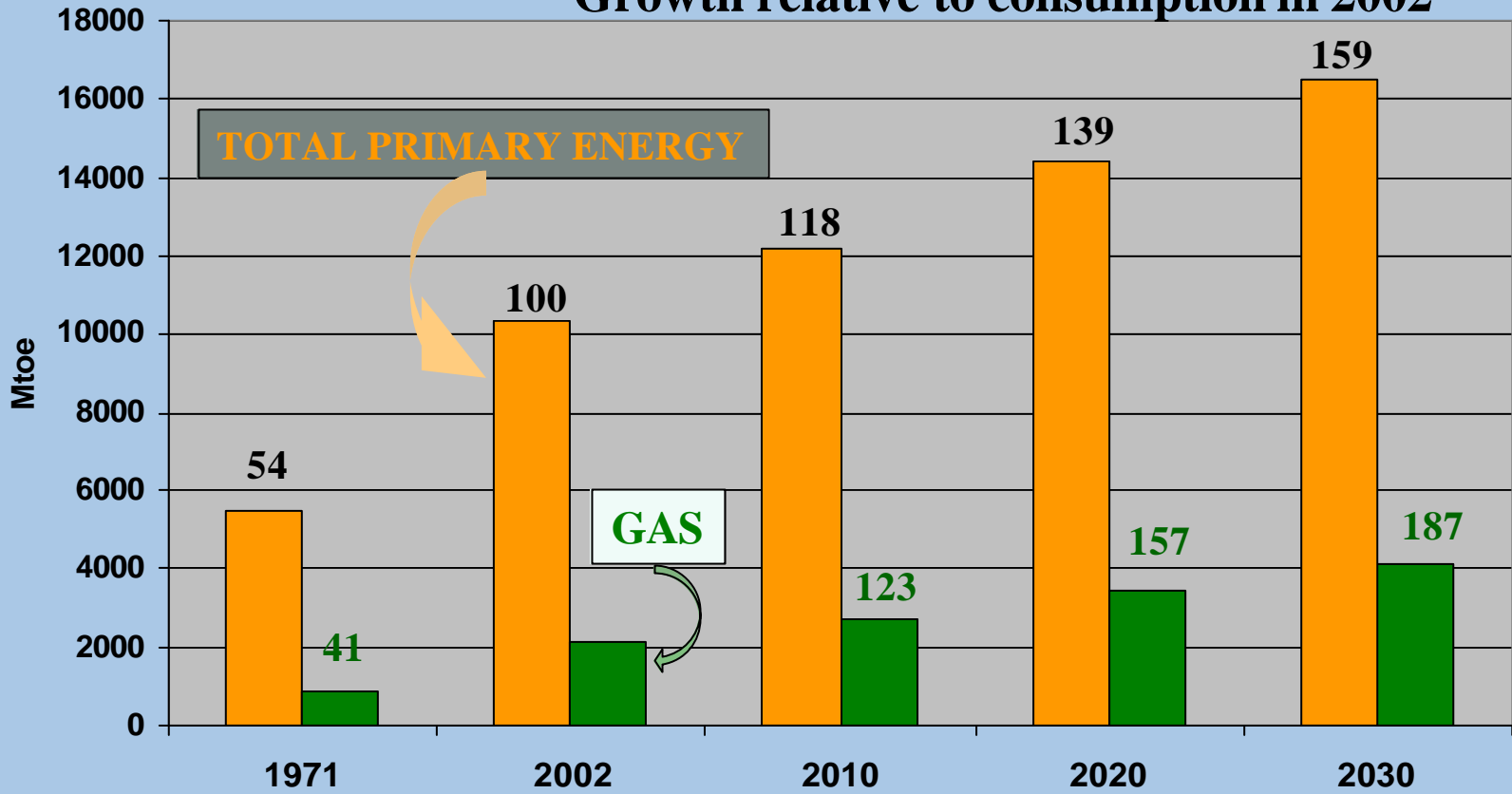


IEA data year 2002



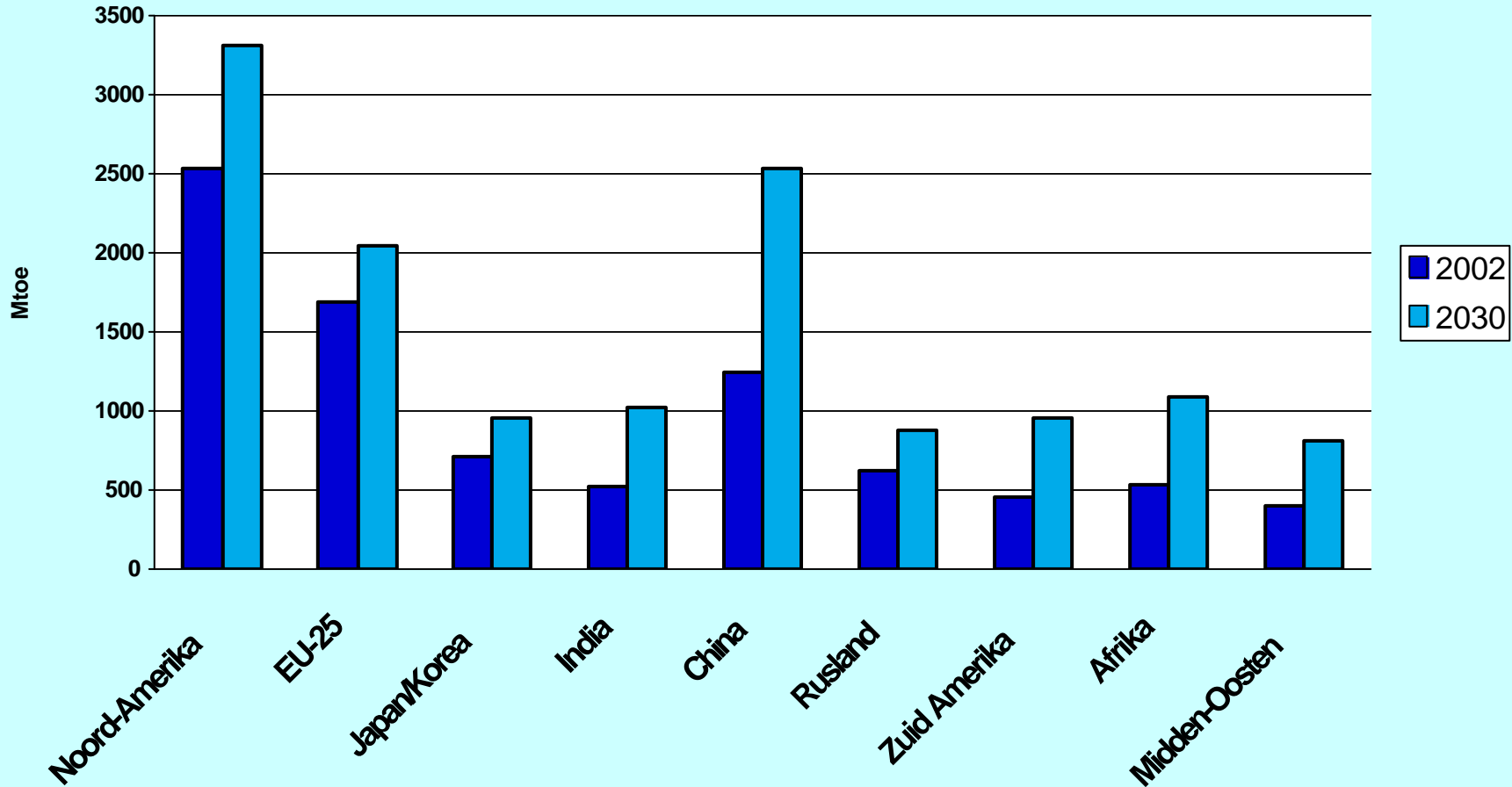
Global Energy Demand Forecast IEA

Growth relative to consumption in 2002





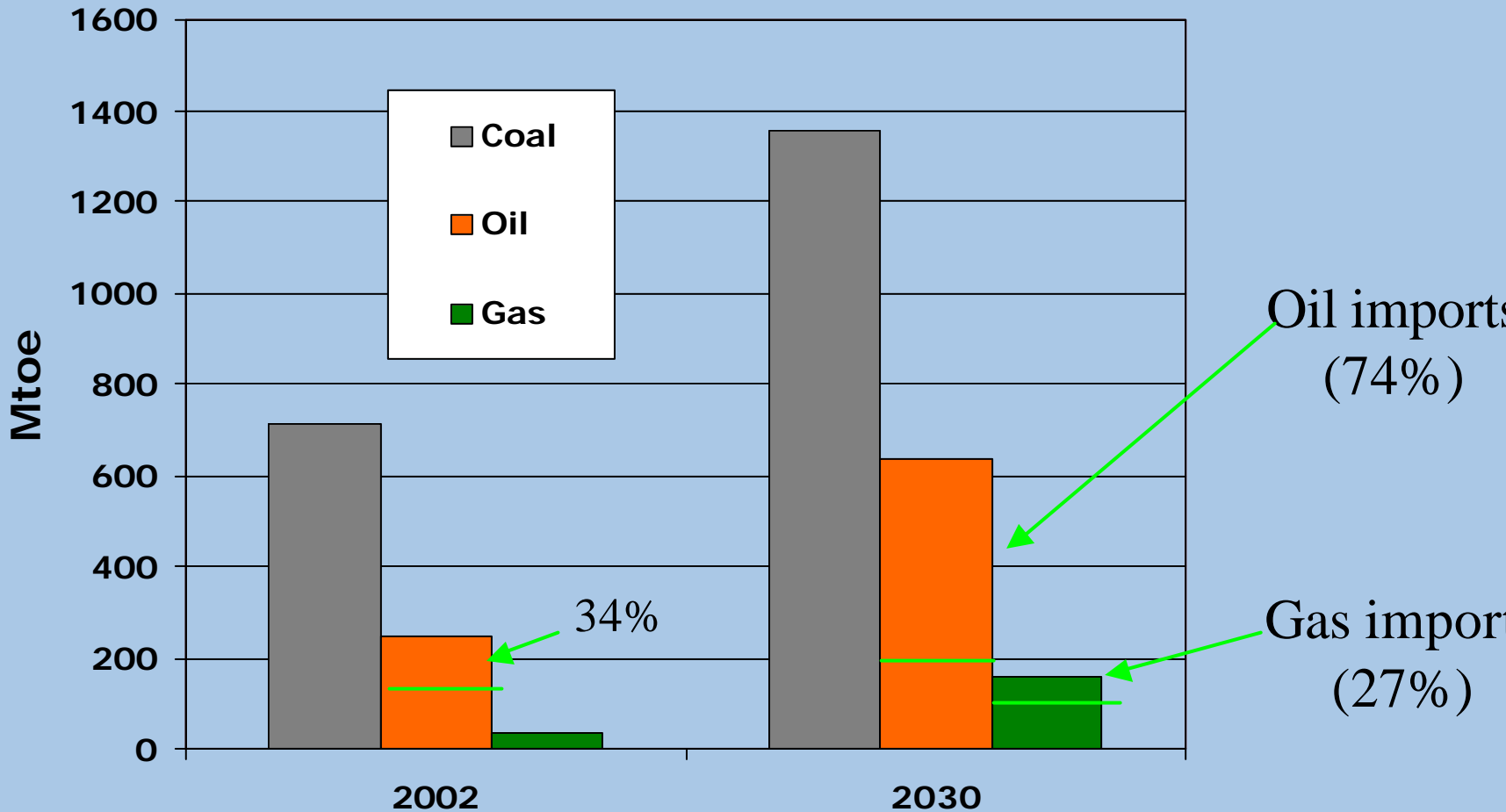
Total Energy Demand by Region 2002 and 2030





China hydrocarbon demand

Chinese gas demand of limited impact globally?

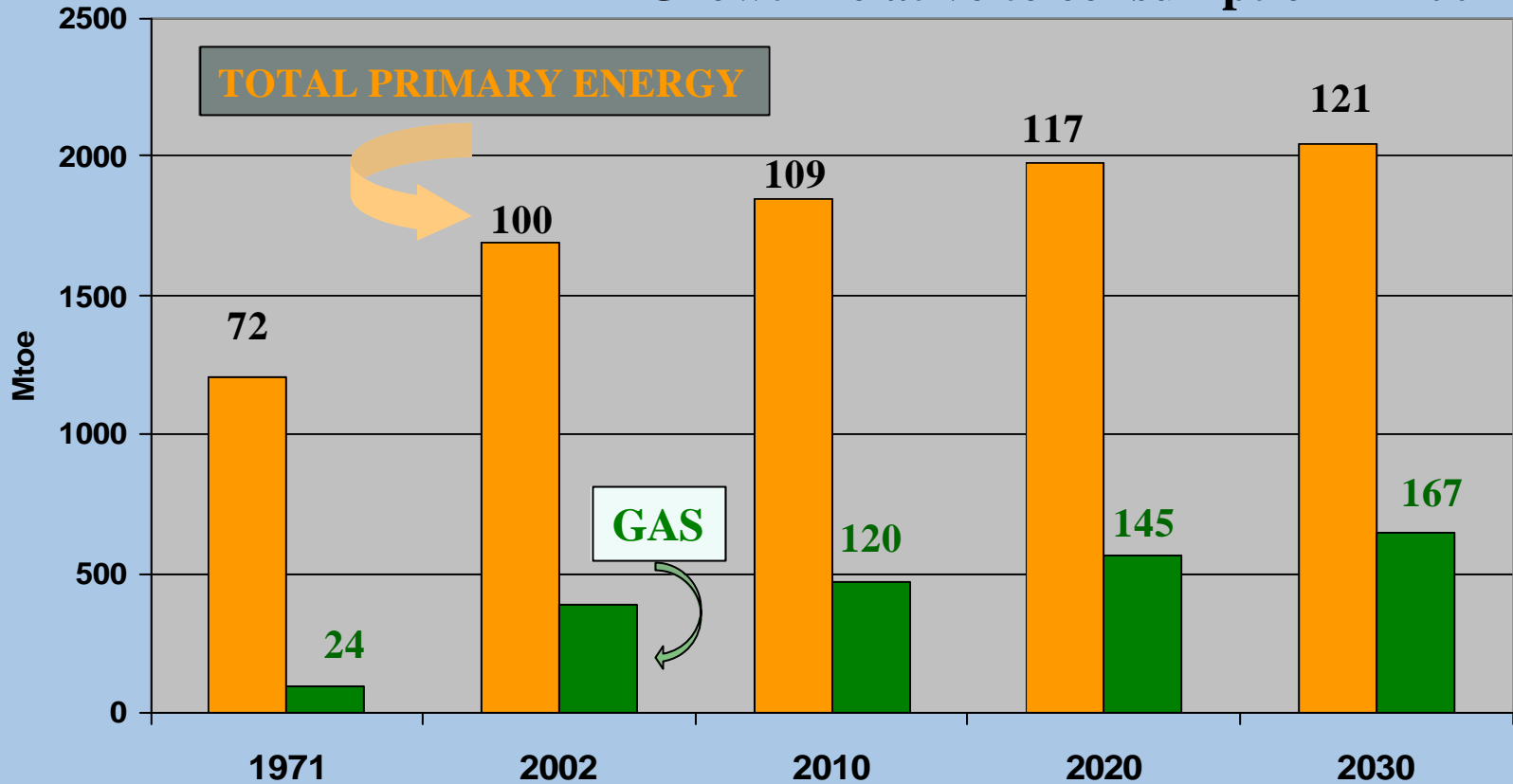


Source: IEA WEO 2004



EU Energy demand Forecast IEA EU (25)

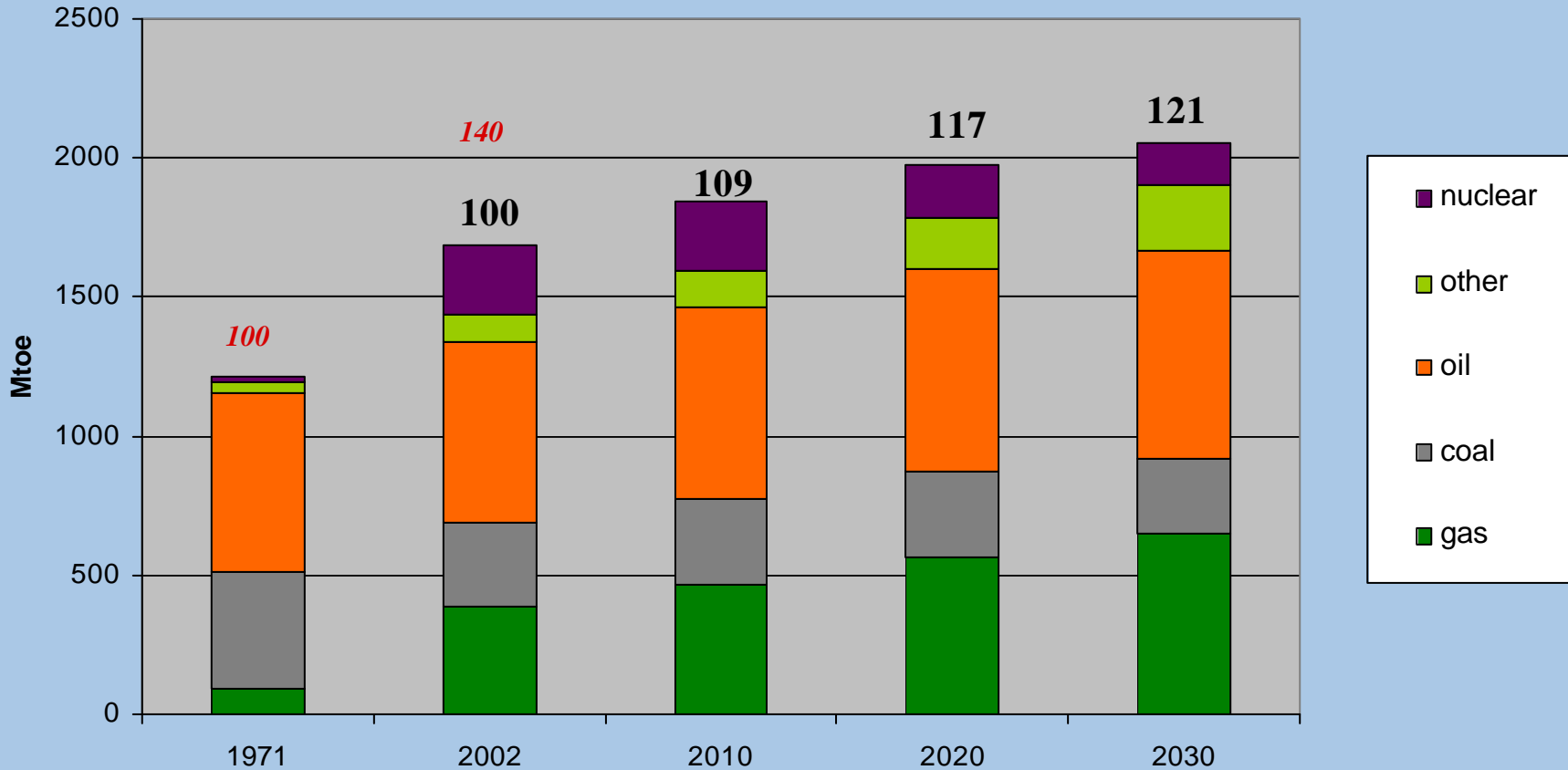
Growth relative to consumption in 2002





Energy demand Forecast IEA EU (25)

Demand rise relative to 1971/2002





Gas Imports EU25 (2004)

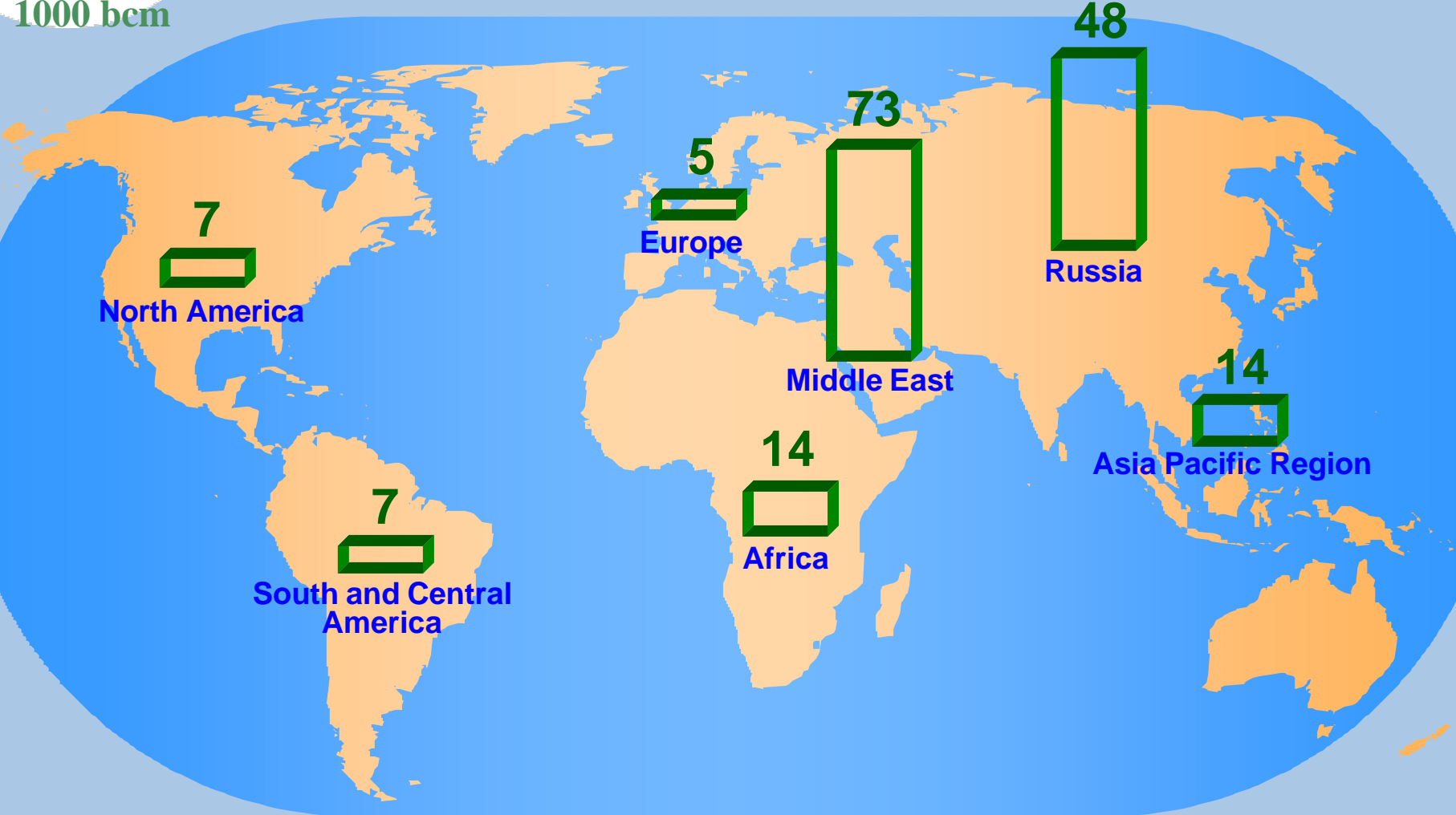
• Russian Federation	107 BCM
• Norway	75
• Algeria LNG+pipelines	55
• Nigeria LNG	15
• LNG several sources	<u>6</u>
	258

Consumption 467



World Gas Reserves Proven 180 Trillion m³ R/P ratio ~66 years

1000 bcm





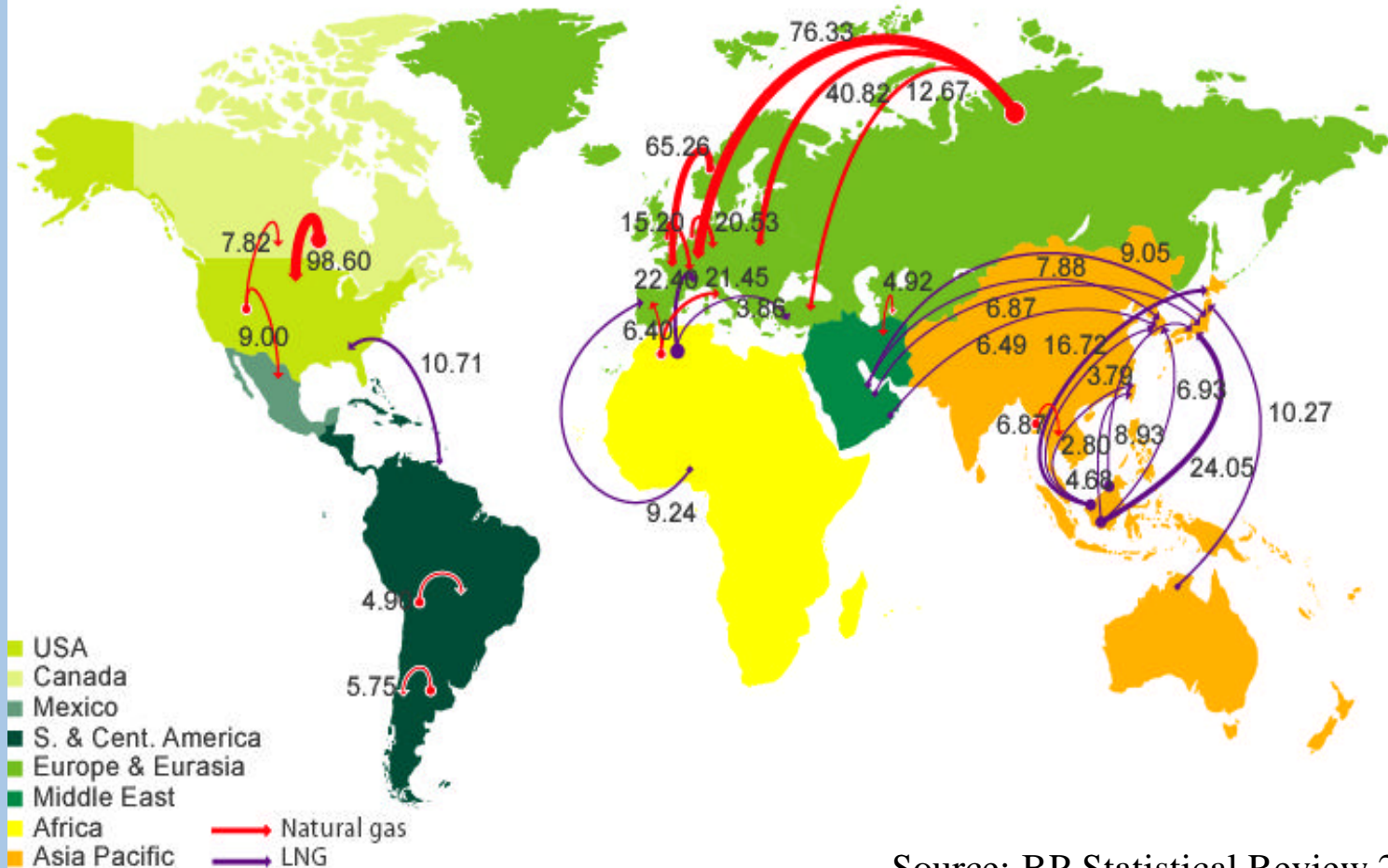
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Major Natural Gas Trade Movements at the Start of the 21st Century

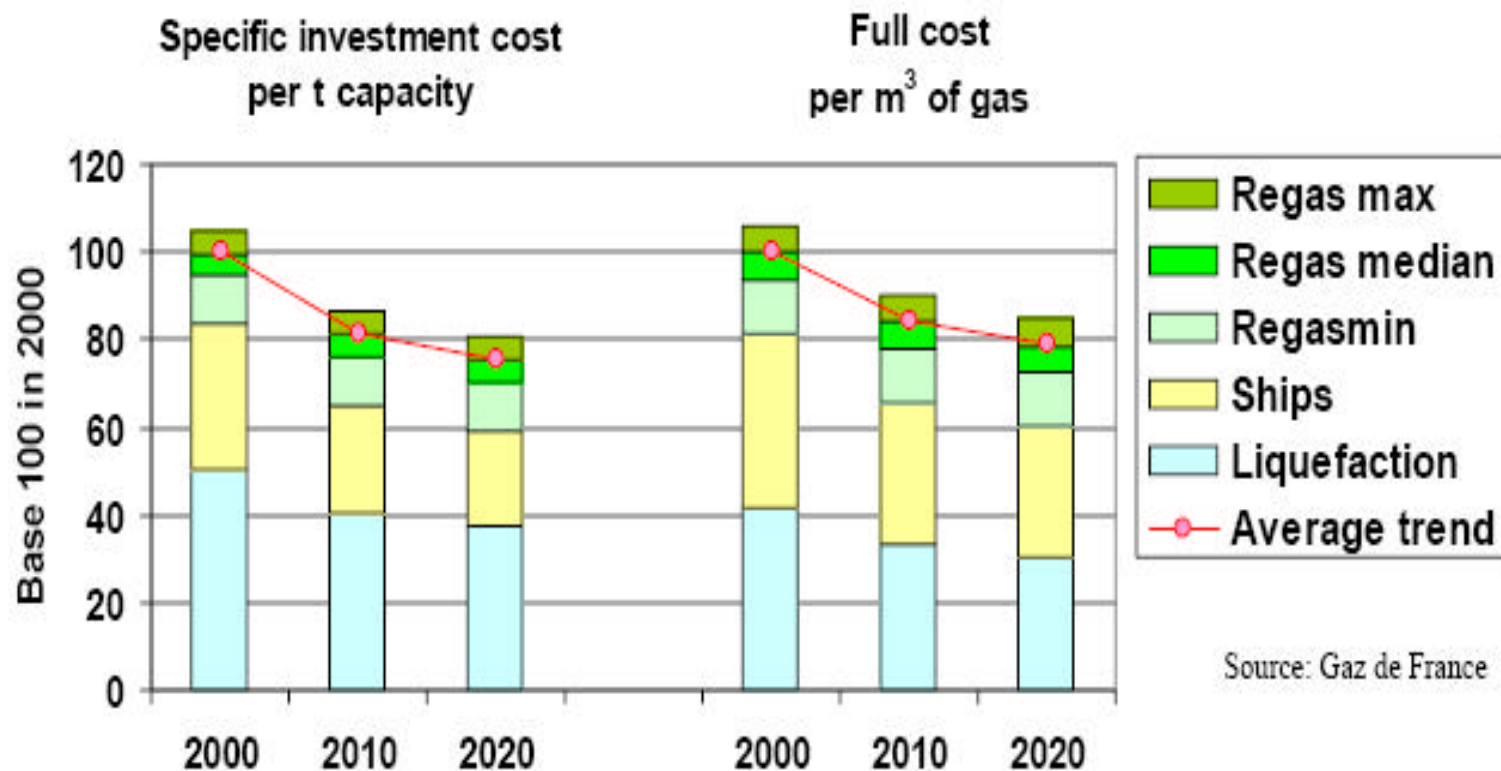
Trade flows worldwide (billion cubic metres)



Source: BP Statistical Review 2004

LNG trumps: decreasing costs

For a 7 400 km LNG chain

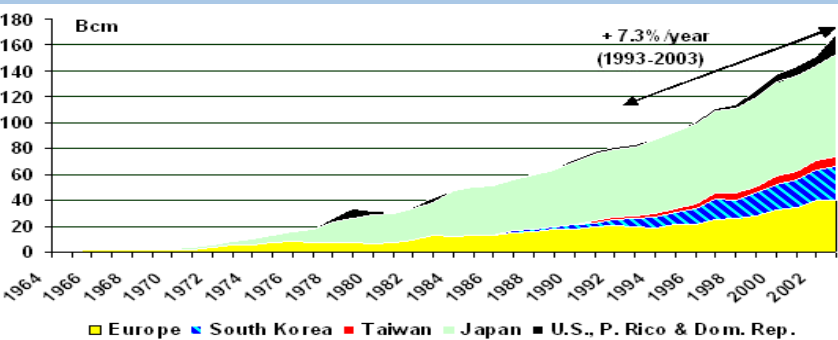
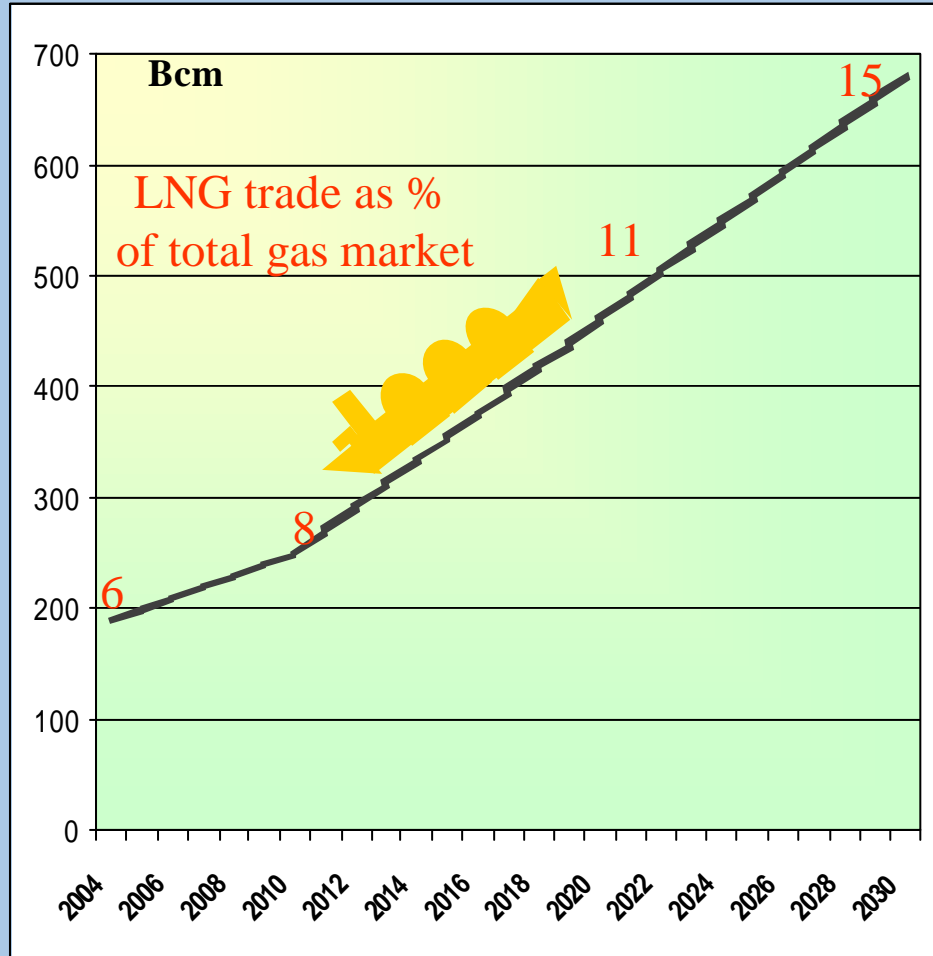
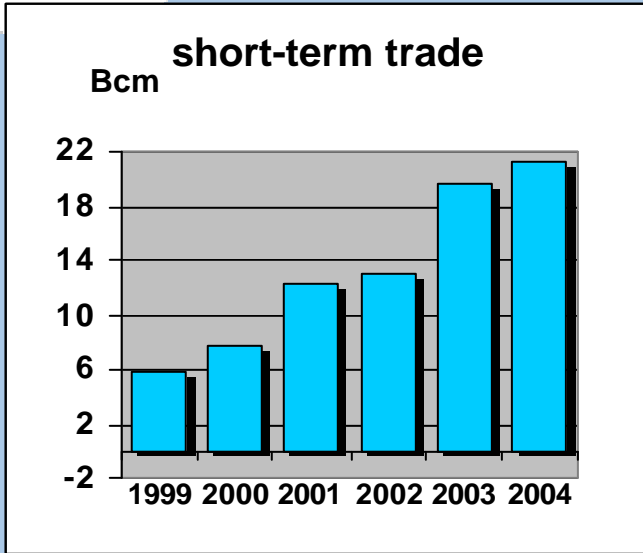


Source: Gaz de France

Source: presentation by GdF at 19th WEC, sept. 2004



LNG Trade History and Perspectives

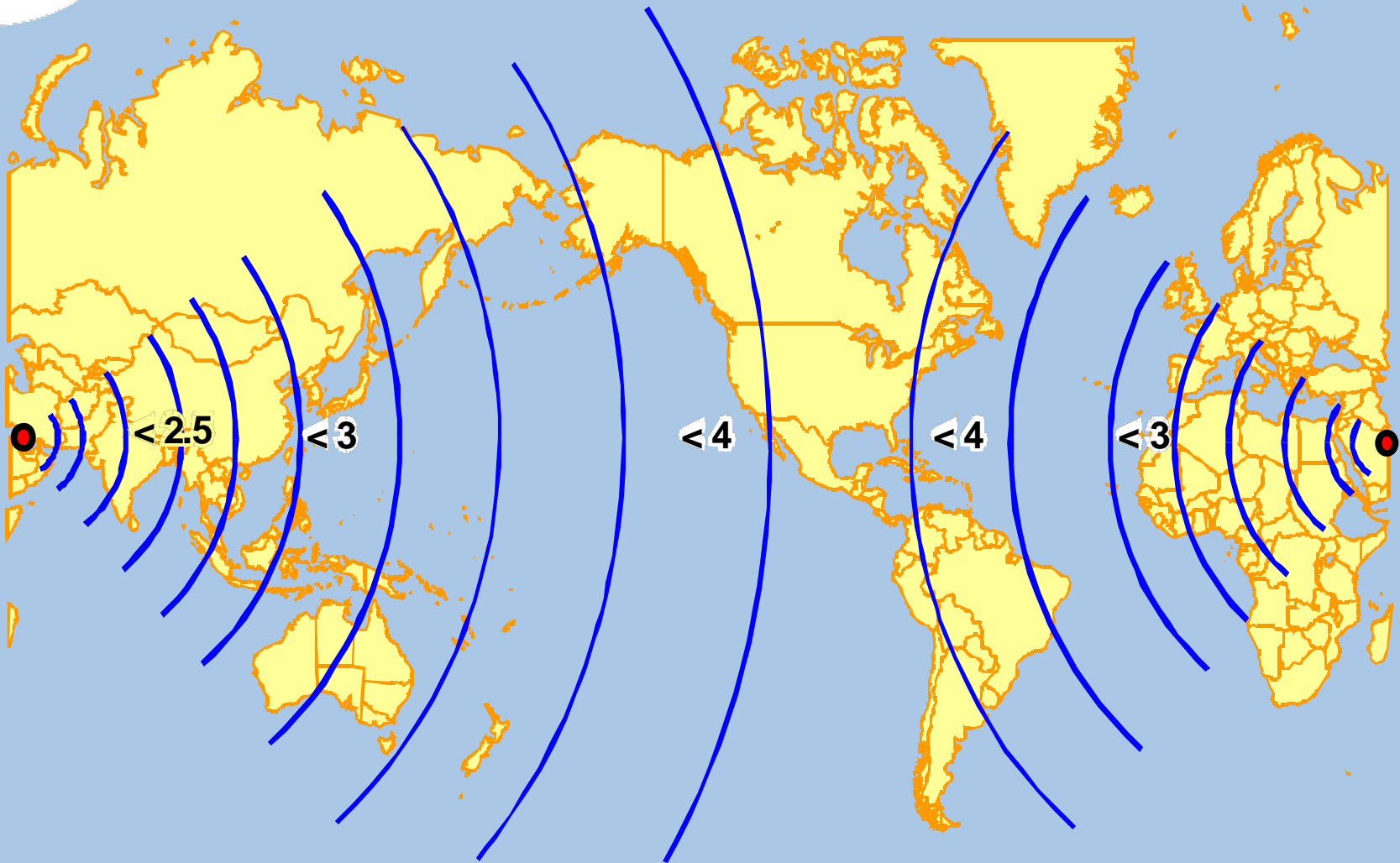


History (CEDIGAZ)

Forecast (IEA weo 2004)



Middle East LNG—Setting a New Global Cost Benchmark (\$ per MMBtu)





International LNG Trade: Connecting Markets



The Supply, Demand and Pricing Outlook
in Western European Gas Markets



From Regional Gas Markets to 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 import regions (Europe, US, Pacific Rim, China, India) will compete with each other for supplies.



Europe's security of supply and LNG (1)

- Not only Europe likes to diversify its supplies, a cost-effective way to cope with the security of supply issue
- Also the suppliers like to diversify their sales portfolios
- LNG will increasingly connect today's separated gas markets
- Long term contracts will remain Europe's backbone for pipeline gas and LNG



Europe's security of supply and LNG (2)

- Growing LNG trade will enable price arbitration, so over time prices in the demand regions become more and more inter-linked.
- The growing LNG spot market enhances flexibility and competition, at the same time it is an essential tool for the big gas suppliers to push gas prices in the desired direction (a reliable supplier cannot close the valve for a LT-gas contract, but he can for spot supplies).



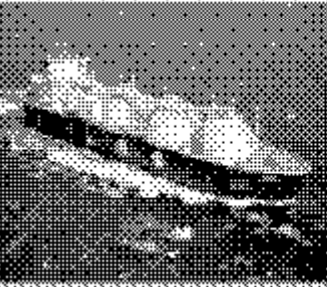



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by Michael McKelvey, CEE, DEPUTY ASSISTANT

LNG Value Chain

			
EXPLORATION & PRODUCTION	LIQUEFACTION	SHIPPING	REGASIFICATION & STORAGE
\$0.5-\$1.0/MMBtu	\$0.8-\$1.20/MMBtu	\$0.4-\$1.0/MMBtu	\$0.3-\$0.5/MMBtu

TOTAL = \$2.00 - \$3.70

Greatest variability is in upstream feedstock for liquefaction and shipping distance.



LNG Transport Marginal costs: Arbitrage Potential ?

- **Gulf**
 - to US instead of Spain 0.18 \$/mmBtu
 - to US instead of Japan 0.21
- **Nigeria**
 - to US instead of Spain 0.26 \$/mmBtu
- **Algeria**
 - to US instead of France 0.53 \$/mmBtu



Impacts on price: Sellers or Buyers Market?

Overall the gas markets will turn out to be a sellers market:

- Strong demand growth
- Investments are delayed, difficult and expensive in important producing areas
- Natural events in important producing regions (Katrina, melting permafrost in Siberia)
- Bottlenecks in LNG-chains till 2008-2010
- Access to promising acreage is difficult



Impact on price: infrastructure

- Expanding infrastructure (pipelines, LNG-regassification terminals) is not a guarantee for ample supplies, it is only a prerequisite;
- It is better to have some over-capacity in the infrastructure than bottlenecks. The low price elasticity of short term demand will cause high price peaks.



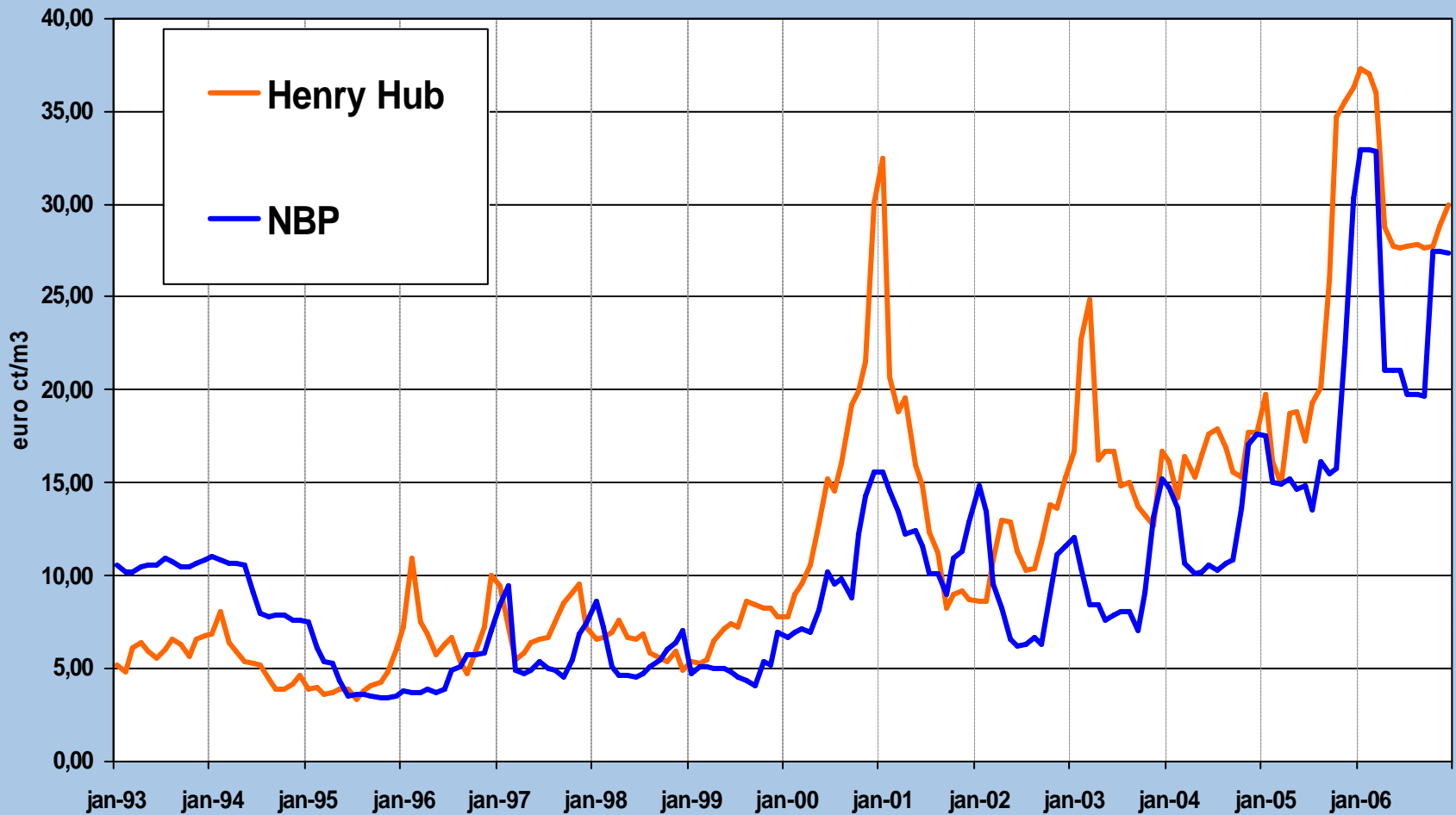
Impact on price: LNG - arbitration

- With a price in the US ca 0,5-1,0\$/mmbtu higher as in UK/Europe it pays to divert LNG-cargos to the US (even if one has invested in a LNG-terminal in the UK).



Gas Prices USA - UK

Price is monthly average





Impact on Price: Contracts??

- There are no (more) destination clauses, what about origin clauses? Even if they still exist they are no longer really relevant in a time of swaps etc. with the expanded infra structure;
- L T Contracts nowadays often do have NBP-related price(s) (formulas);
- With a liquid NBP, gas suppliers with a NBP related price in their LT contract, will presumably have therefore volume flexibility (Gasunie, Statoil);



Impact on Price: linked to oil price ?

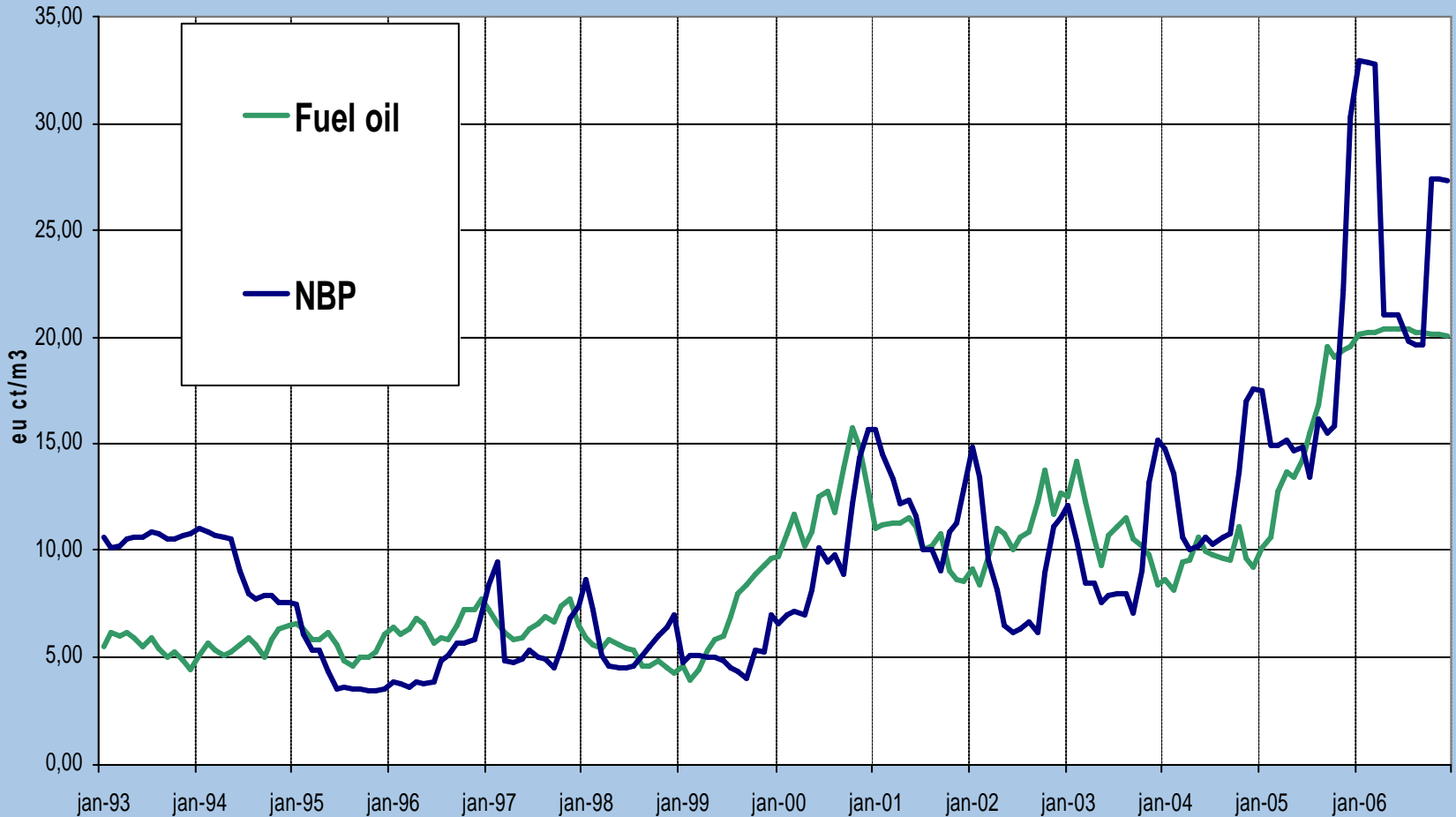
- Gas and Oil remain substitutes in major parts of the energy market;
- There are important parts of industry dual-fired, they will by their role in the energy market “link” the prices;
- Large users who like to hedge their energy contracts prefer oil-related gas prices
- The Upstream shackles of the gas and oil chains are very much similar:

So Gas Prices will remain “linked”/“correlated” to oil(product) prices, but they will have their own volatility



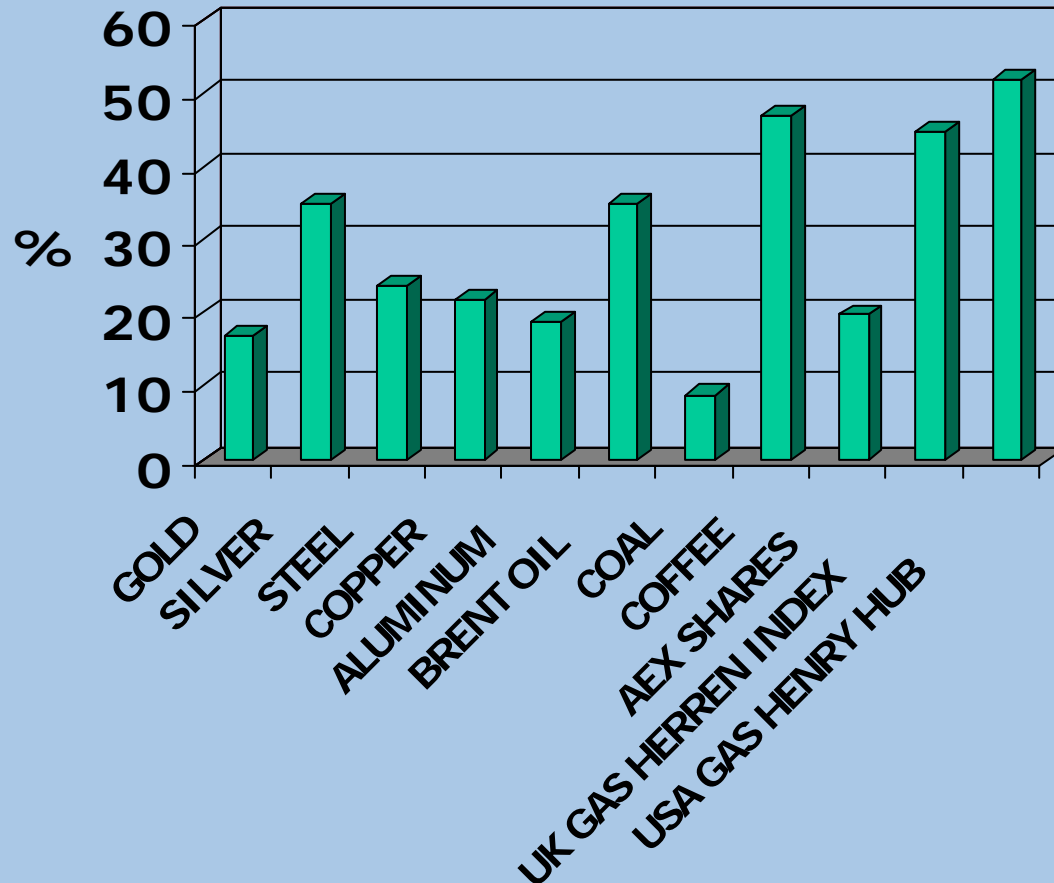
Prices: UK (spot) versus Fuel Oil

Price is monthly average





Impact on Price: Price Volatility of several Commodities





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Oil Prices: How High is High?

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



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

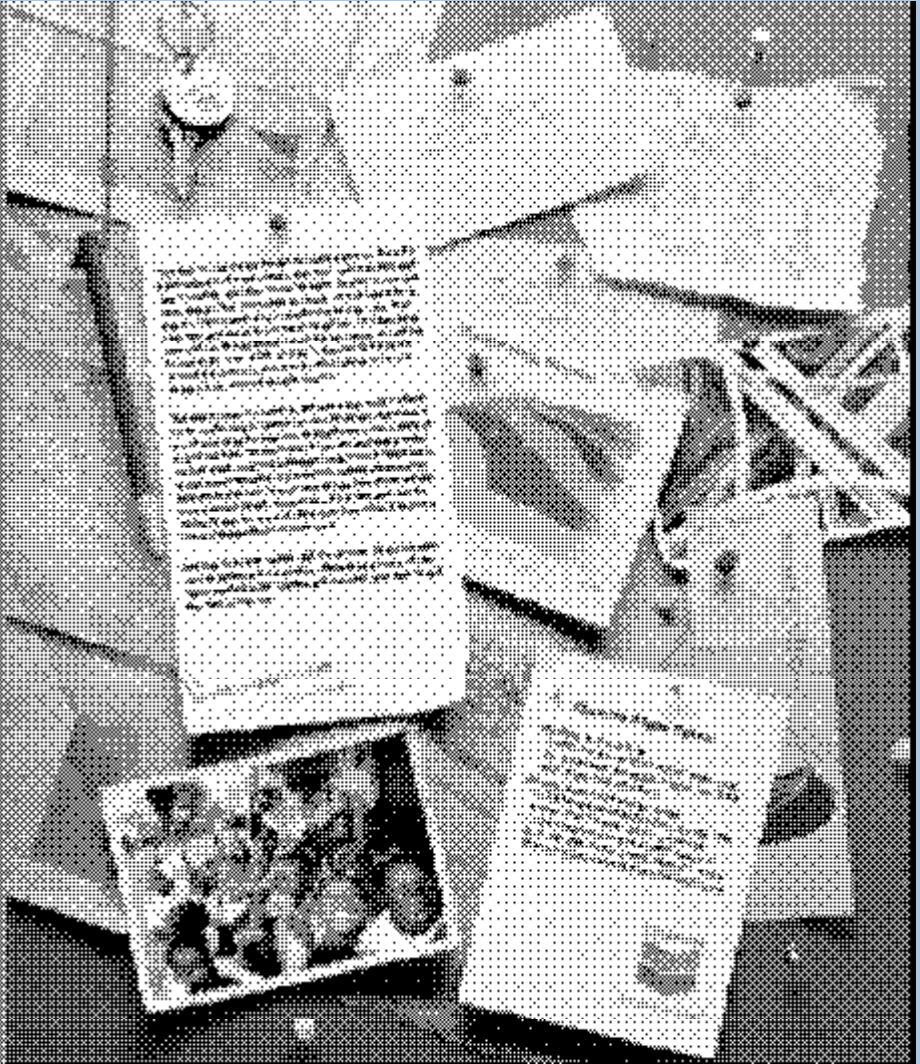
at EIA Midterm energy Outlook Conference, april 12 2005



CHEVRON. So is this something you should be worried about?

The World consumes two barrels of oil for every barrel discovered.

It is this imbalance that you should be worried about.



in Western European Gas Markets



Replacement of Reserves

... the industry has replaced only half the reserves it has produced and needs to spend \$ 40 bn a year, rather than the current \$ 14 bn, to ensure it found a new barrel of oil for every barrel consumed.

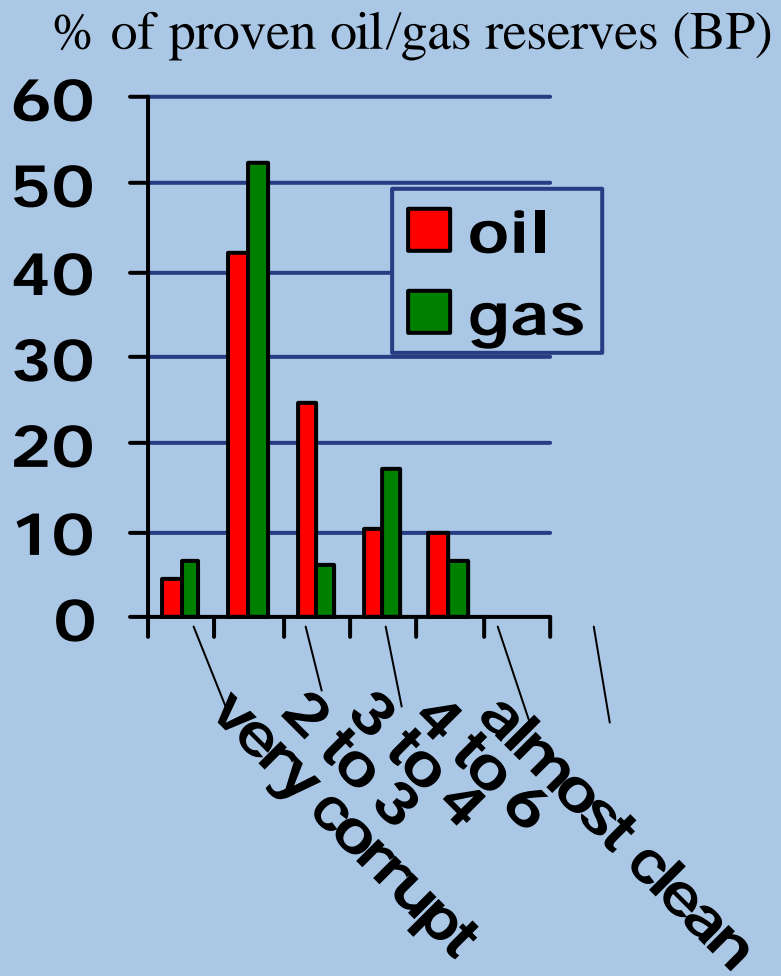
(Wood Mackenzie in Financial Times, 4 Oct 2005)



Transparency: 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

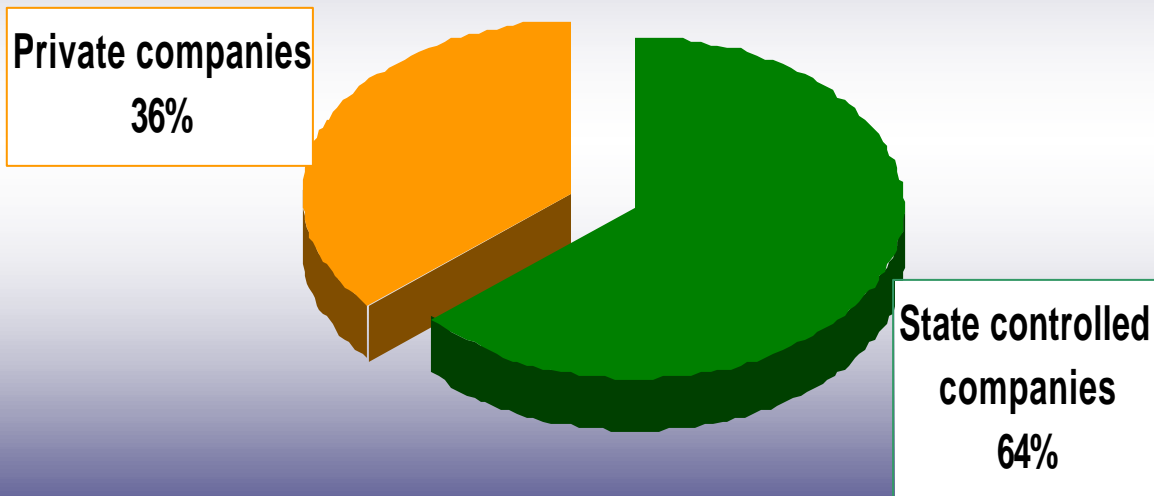
BUT PROGRESS IS IN THE AIR





Who Owns the Gas (and Oil) Reserves?

CONTROL OVER PRODUCTION OF REMAINING COMMERCIAL RESERVES NATURAL GAS



OIL: ~ 50/50



At what height is the Ceiling or do we have Open Skies ?

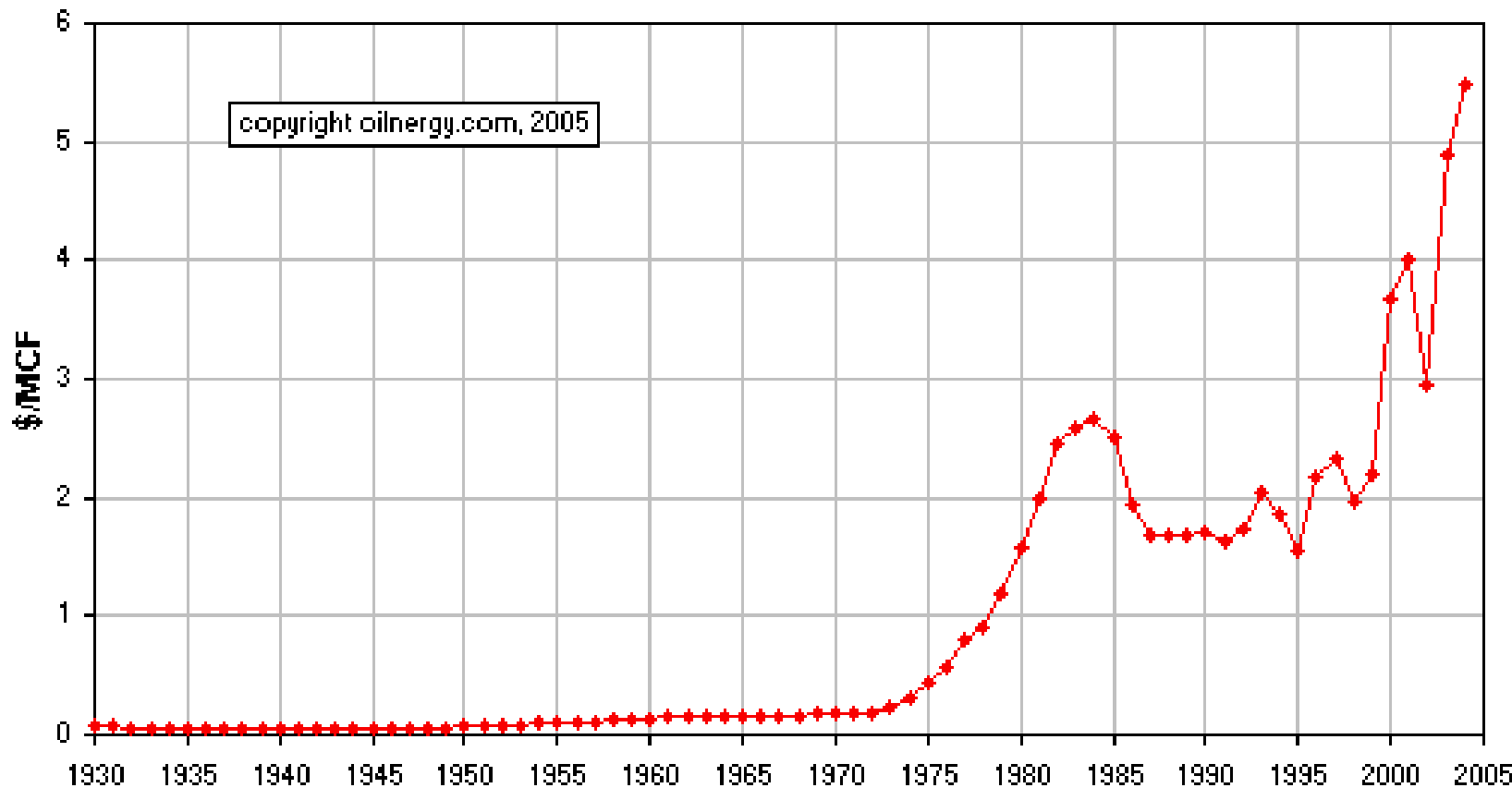
NYMEX Henry-Hub Natural Gas - 12 previous months





US Wellhead Gas Price

U. S. Wellhead Natural Gas Price





What about Demand Destruction?

- Power Generation will take less Gas, but Coal is not an easy alternative due to the emissions;
- A revival of nuclear seems to be in the cards, but that takes time;
- Closing Chemical Industry and Energy Intensive Industry lowers demand mainly to the extent it is not a relocation of that industry to regions with lower energy/gas prices.




Sustainability: As a Responsible Industry We Acknowledge:

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



**Thank you
for your attention**



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

