
Don't Run Out of Gas! Ensuring Energy Availability

Energy 2006

Chicago, 7 August 2006

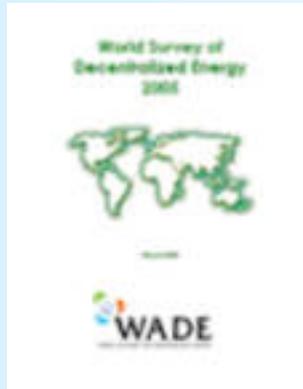
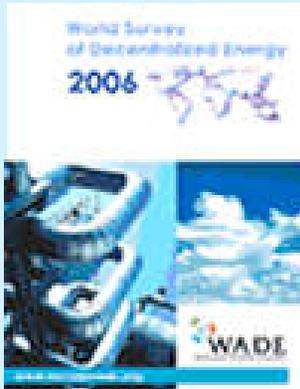
**David Sweet – Executive Director
World Alliance for Decentralized Energy (WADE)**



WADE – Key Points

- Non-profit research & promotion organisation created June 2002
- Mission
 - To accelerate the deployment of DE systems worldwide
- WADE is supported by:
 - National DE organisations
 - *COGEN Europe, COGEN Netherlands, COGEN Portugal, UK CHPA*
 - *US CHPA*
 - *COGEN India*
 - CHP/DE companies with international interests
 - *Capstone, Siemens, MAN, Solar Turbines, FuelCell Energy, MTU, Marubeni, Primary Energy, Wärtsilä, Thermax, Statoil*
 - National governments (eg US, Norway, Canada)

WADE Research



DE Market data

Future Studies:

Onsite Power in the Cement Industry, August 2006

Cogeneration and the CDM, September 2006

Onsite Power and Security, ?

Sector Specific DE Research

Research on Specific Challenges facing DE



What is Decentralized Energy (DE)?

Electricity production *at the point of use*, irrespective of size, fuel or technology – on-grid or off-grid:

- High efficiency cogeneration
- On-site renewable energy

Doomsday Scenario

“The world will soon start to run out of conventionally produced oil. If we manage somehow to overcome that shock by shifting the burden to coal and natural gas, the two other primary fossil fuels, life may go on more or less as it has been – until we start to run out of all fossil fuels by the end of this century... Even if human life does go on, civilization as we know it will not survive, unless we can find a way to live without fossil fuels.”

Out of Gas, by David Goodstein

A Contrarian Voice

- “The raw fuels are not running out. The faster we extract and burn them, the faster we find still more.”
- “The cost of energy as we use it has less and less to do with the cost of fuel.”
- “The more efficient our technology, the more energy we consume.”
- “The competitive advantage in manufacturing is now swinging decisively back toward the United States.”

The Bottomless Well, by Peter Huber
and Mark Mills

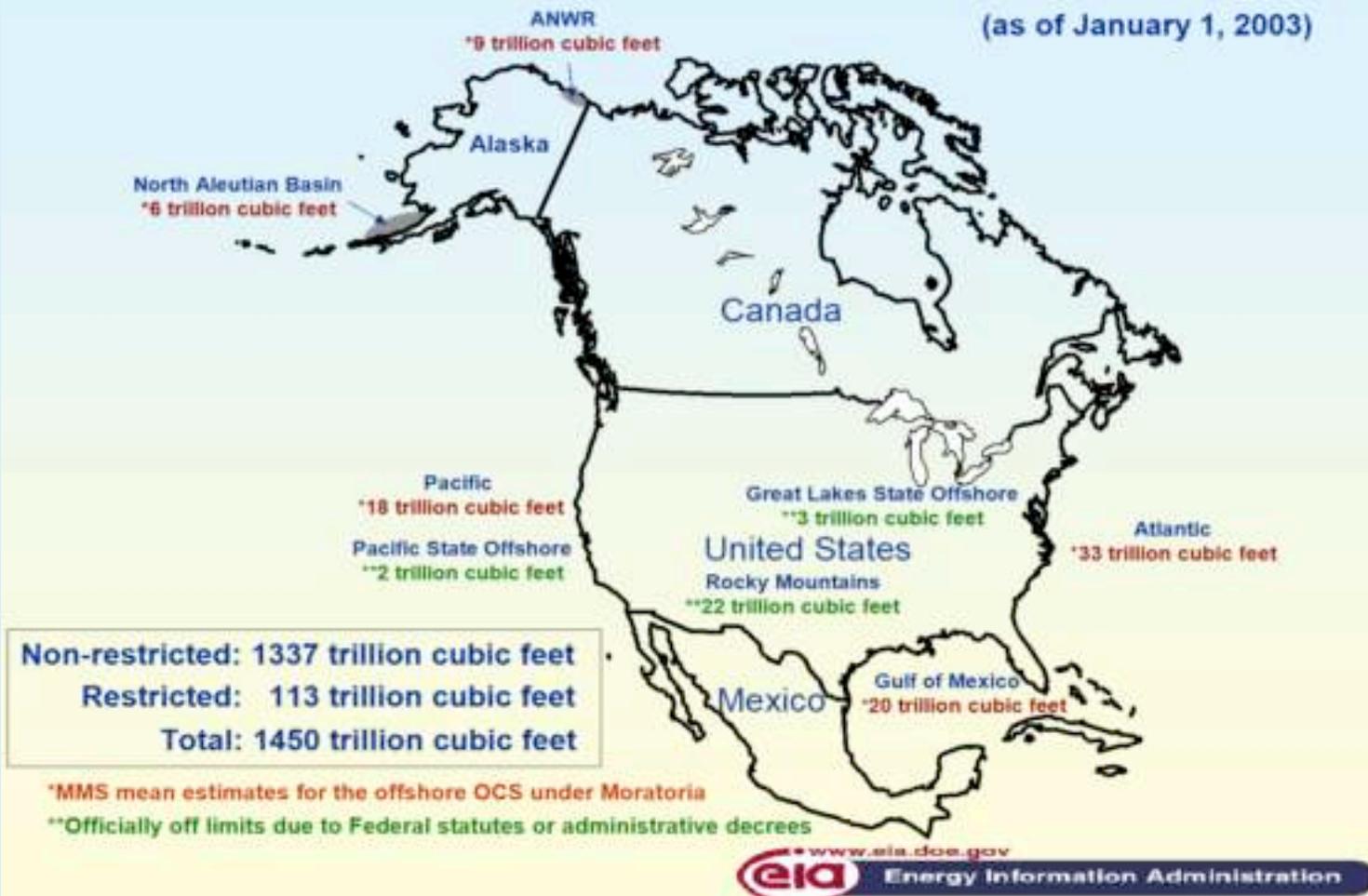
Need for Natural Gas Supply Drives Policy

- Natural gas is the fastest growing energy source in the U.S.
- Natural gas supplies approximately 25% of U.S. energy.
- The U.S. consumes about 25% of the world's annual natural gas production.
- Natural gas demand in the U.S. is expected to increase almost 40% by 2025.

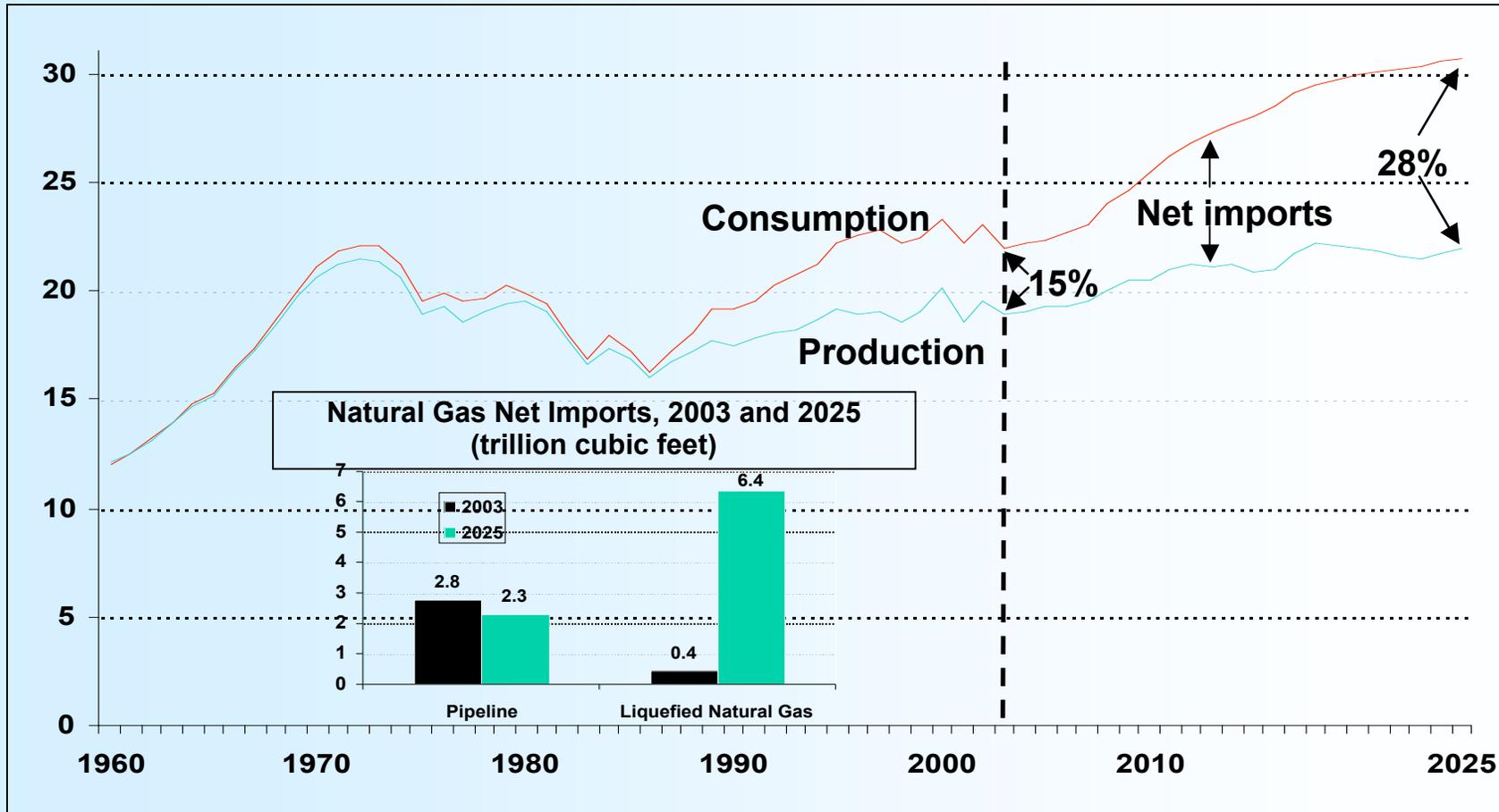
US supplies are vast, but access is restricted

Technically Recoverable Restricted Access U.S. Natural Gas Resources

(as of January 1, 2003)

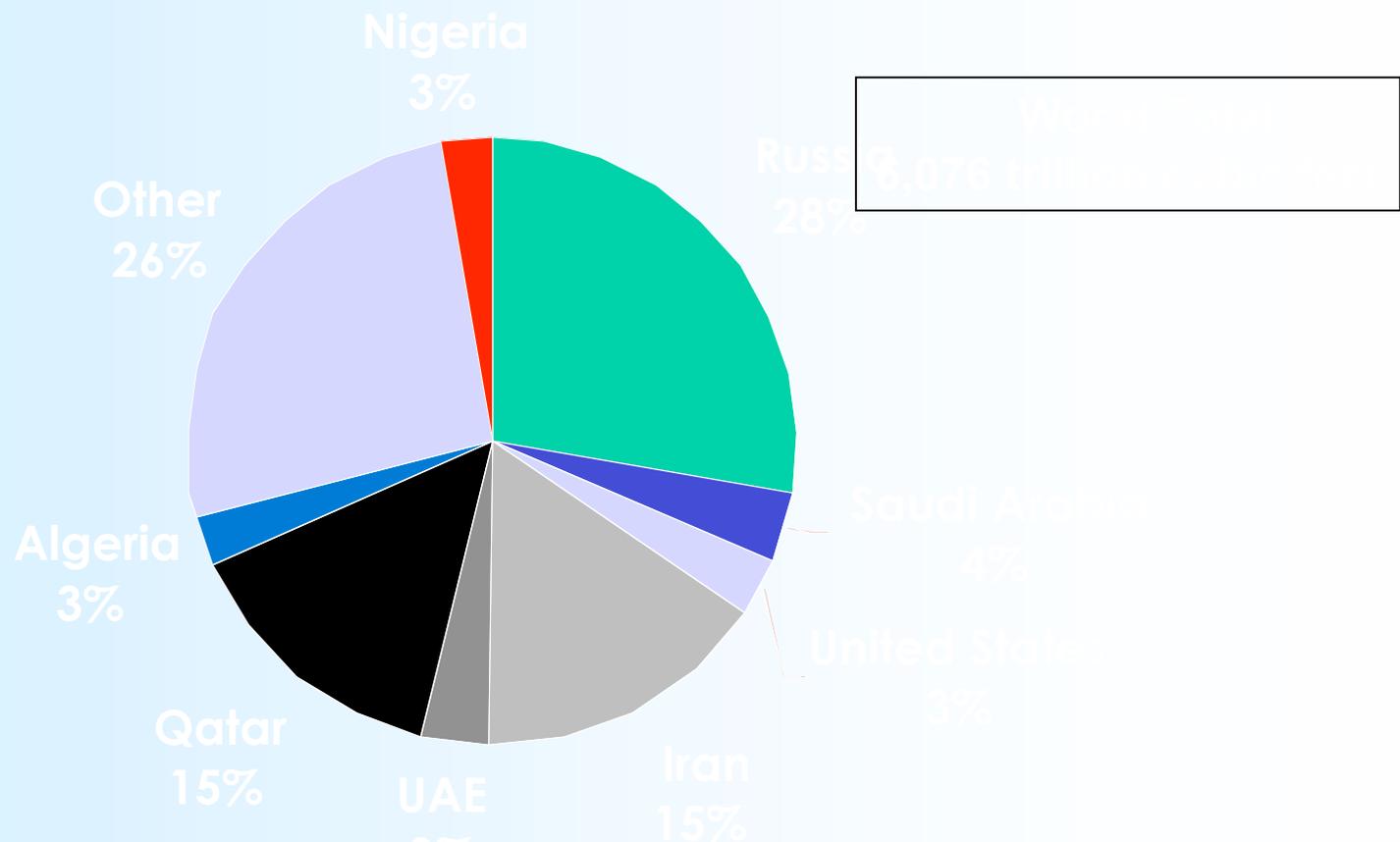


Gap Between U.S. Natural Gas Demand and Supply is Widening



Source: EIA Annual Energy Outlook 2005

World Natural Gas Reserves, January 1, 2004



Source: "Worldwide Look at Reserves and Production," Oil & Gas Journal
Vol. 101, No. 49 (December 22, 2003), pp. 46-47.

LNG Value Chain

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

Source: BG, ALNG, CMS, University of Houston (IELE)

Old King Coal is Back

Coal's Resurgence in Electric Power Generation



Equivalent Power
for
59 Million Homes

Proposed New Plants

92 Plants
59 GW
\$ 69 Billion



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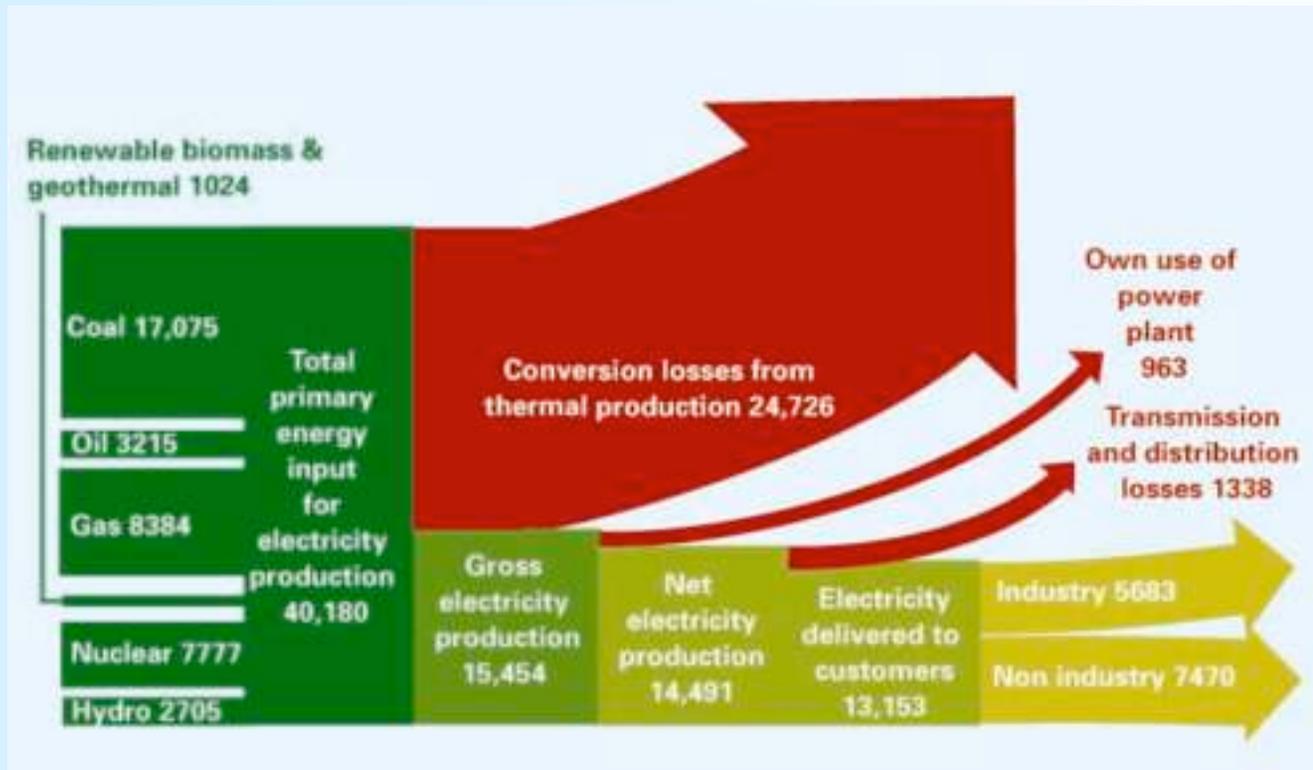
OCES 07/20/2004



Central generation wastes energy

Electricity Generation Worldwide (TWh)

(source: International energy Agency 2002)



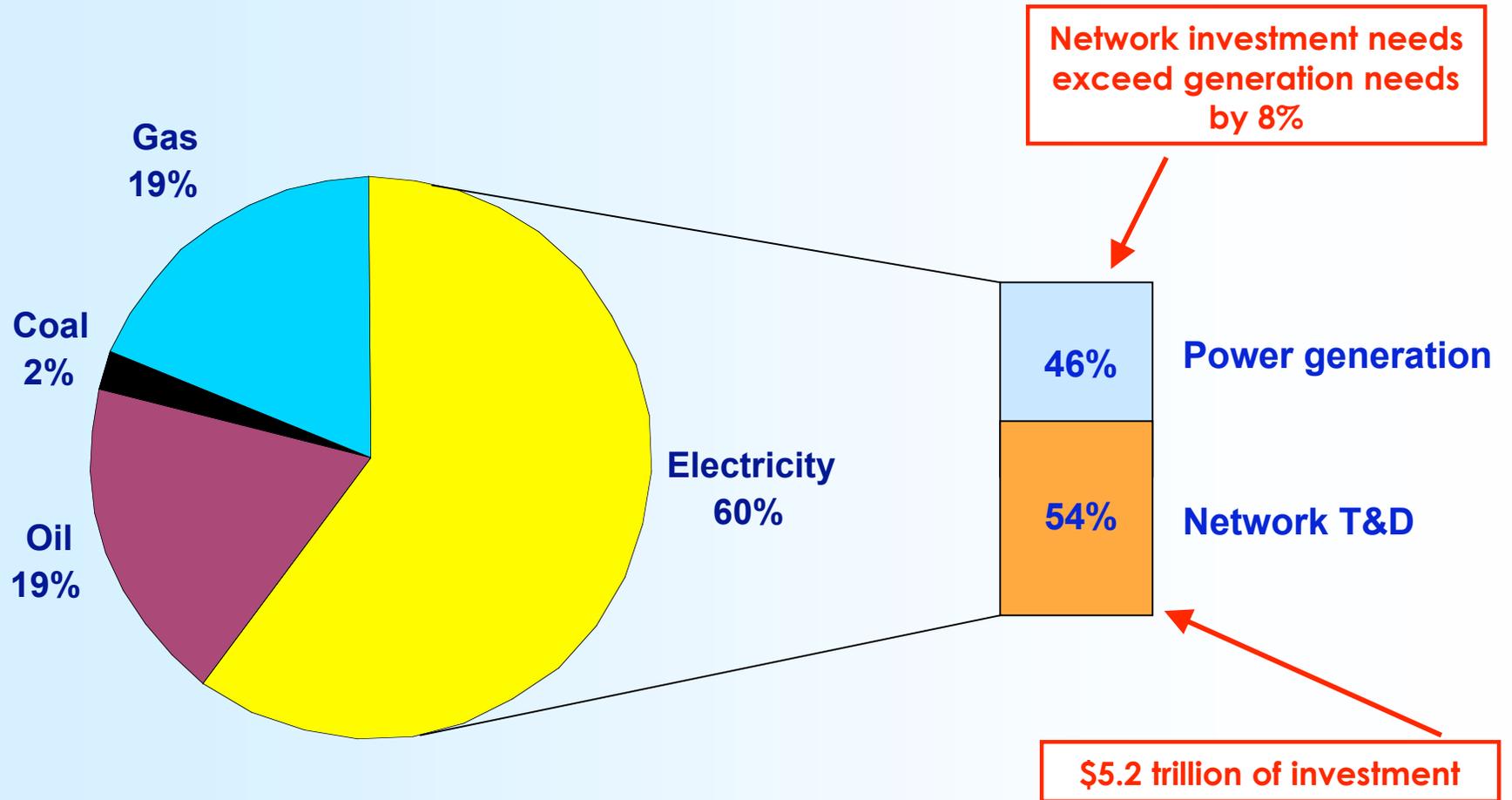
UK (DTI):

Conversion losses: 56.7%

→ Overall efficiency: 37.1%

Power plant use and T&D losses: 6.2%

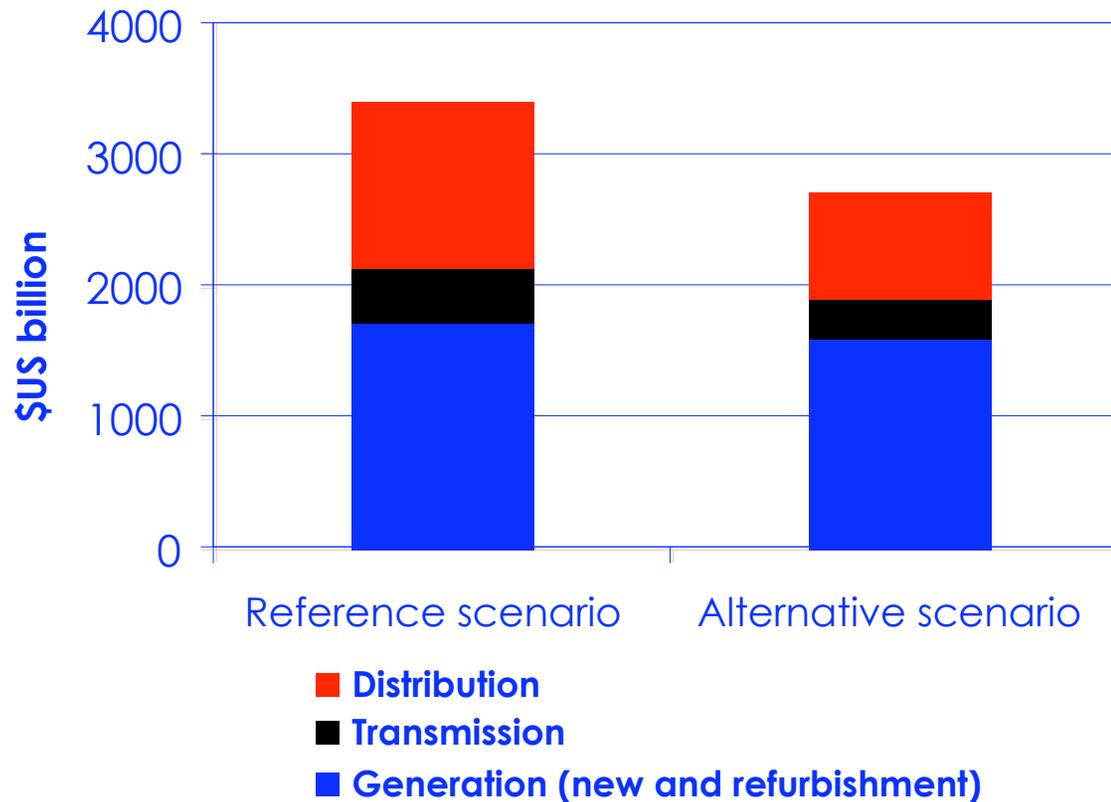
World All-Energy Investment, 2001 - 2030



Source: International Energy Agency, 2003 Reference Scenario – Business-as-Usual

IEA: DE needs less T&D network investment

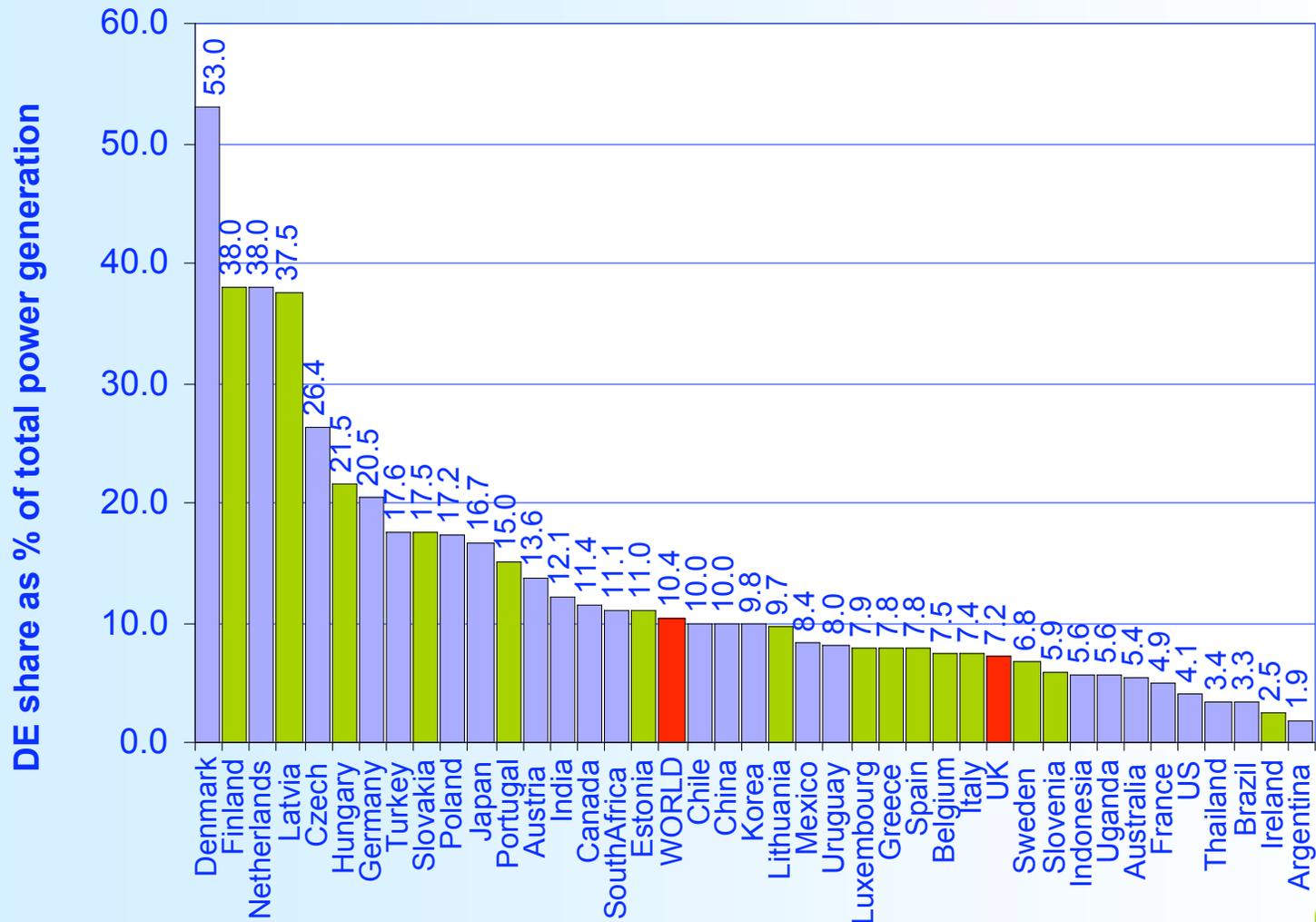
OECD Investment in Reference (BAU) and Alternative Policy Scenarios, 2001-2030



Alternative scenario:
■ More DE
■ More efficiency

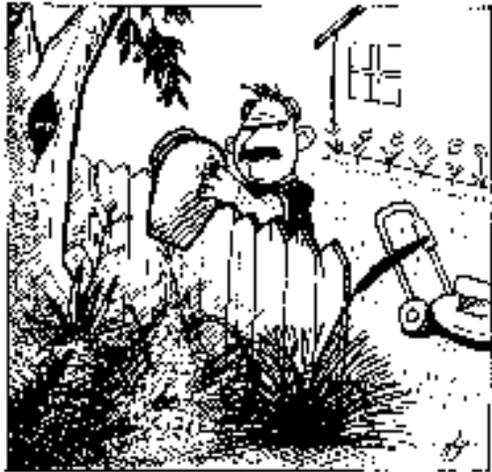
Source: International Energy Agency, 2003

Global DE Statistics

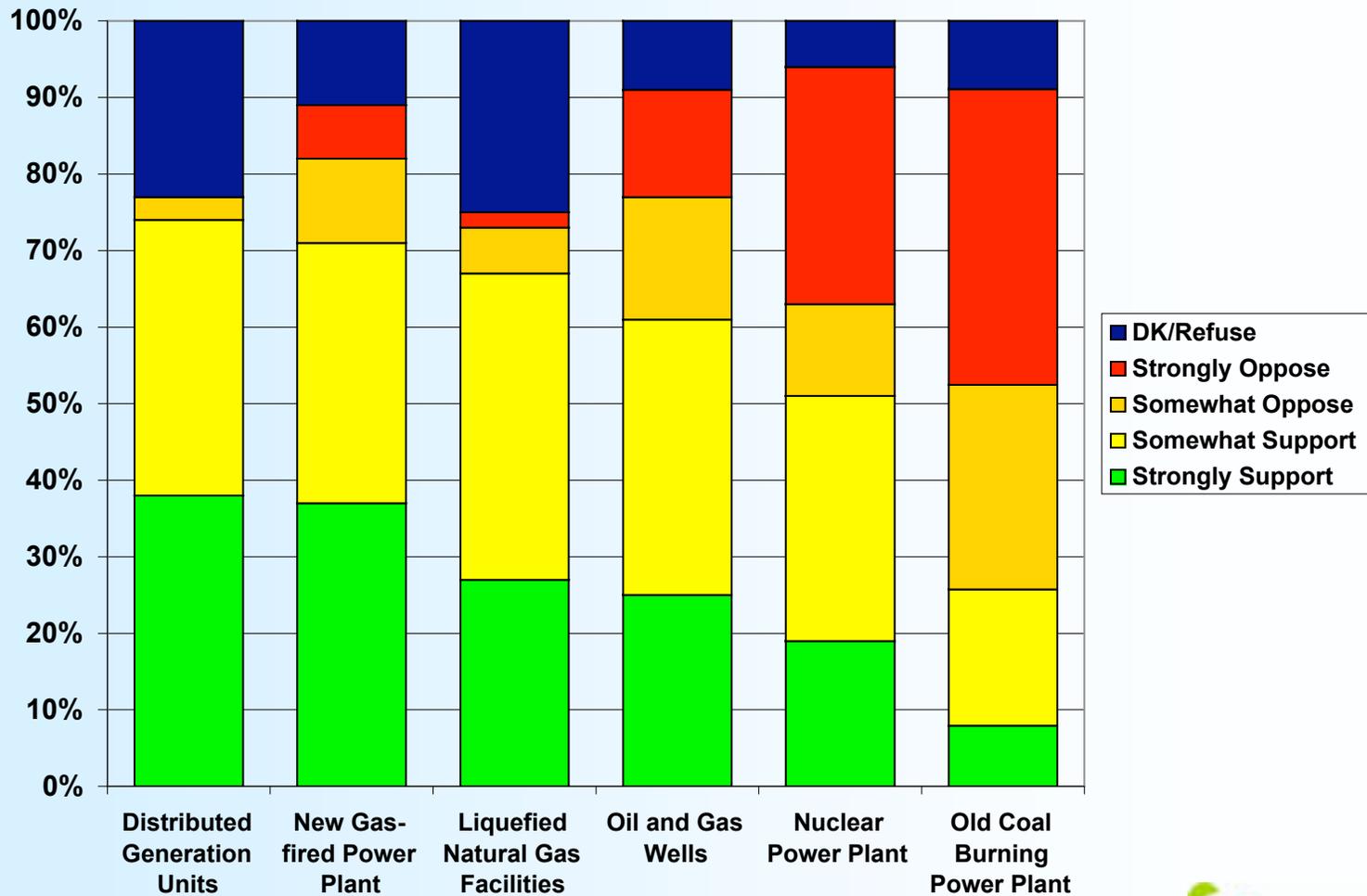


Source WADE Annual World Survey of DE 2006

But NIMBY, BANANA and NOPE Forces are Prevalent



Would you support or oppose the following facilities in your district or state?

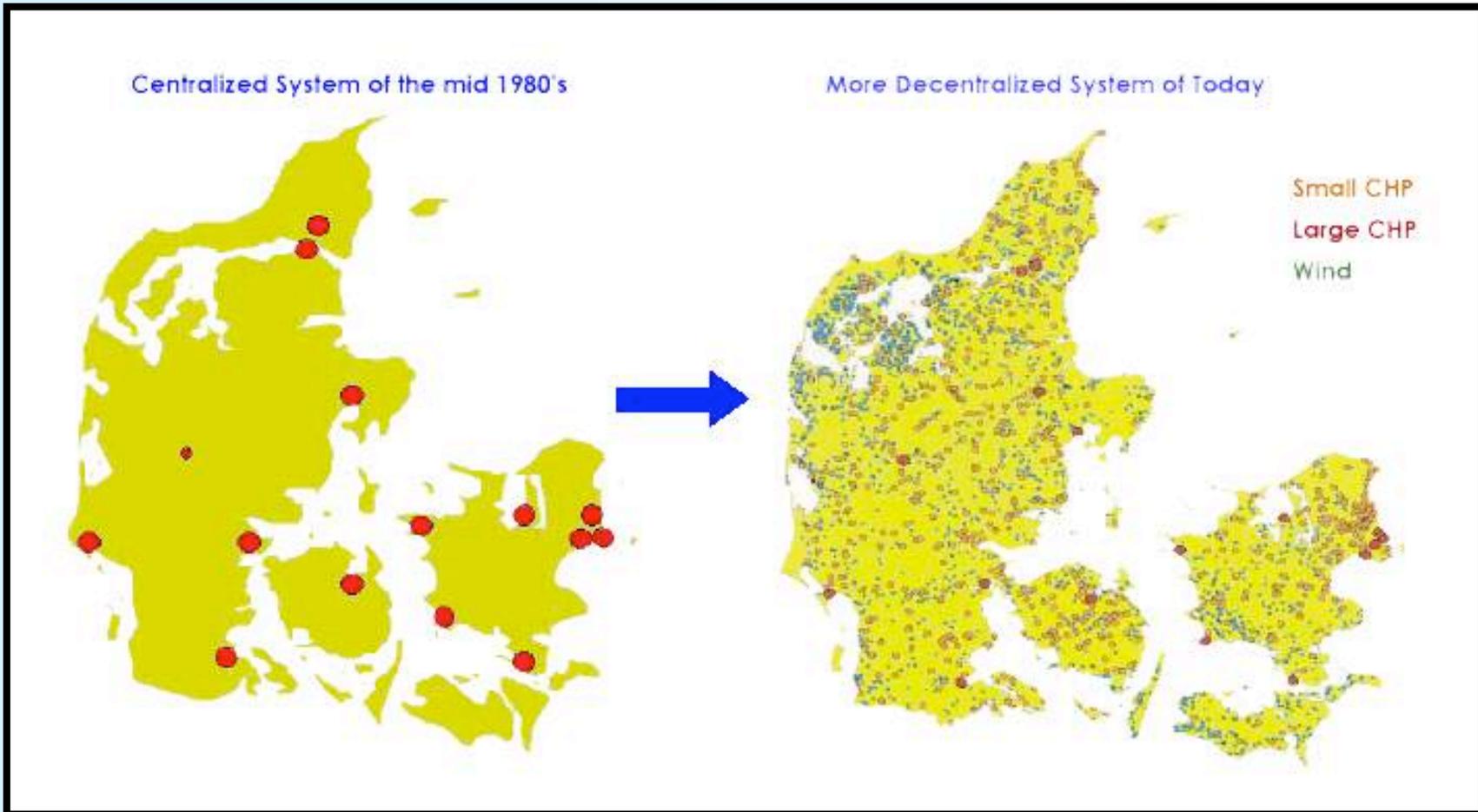


Do you believe the U.S. will face an energy shortage in the next 10 years?



San Francisco MSA residents (71%) are more likely to feel that there will be an energy shortage within the next 10 years than their San Diego MSA counterparts (63%), though a majority in both regions concur.

What is possible for a country



Source: Danish Energy Center

What is possible for the world

Indicator of Human Welfare	Commercial Share of Total Energy		
	0-20 %	21-40 %	41-100 %
Life Expectancy (Years)	59.8	69.0	69.5
Probability of not surviving to 40	21.7	9.4	9.1
School Enrollment (%)	52.4	65.4	76.9
Children Underweight (%)	40.9	15.1	11.9
No Access to Clean Water (%)	20.9	22.8	12.8

Thank you for your attention

Any questions?

World Alliance for Decentralised Energy

www.localpower.org

