

The Changing Context of Sino-U.S. Energy Relations



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Today's Talk

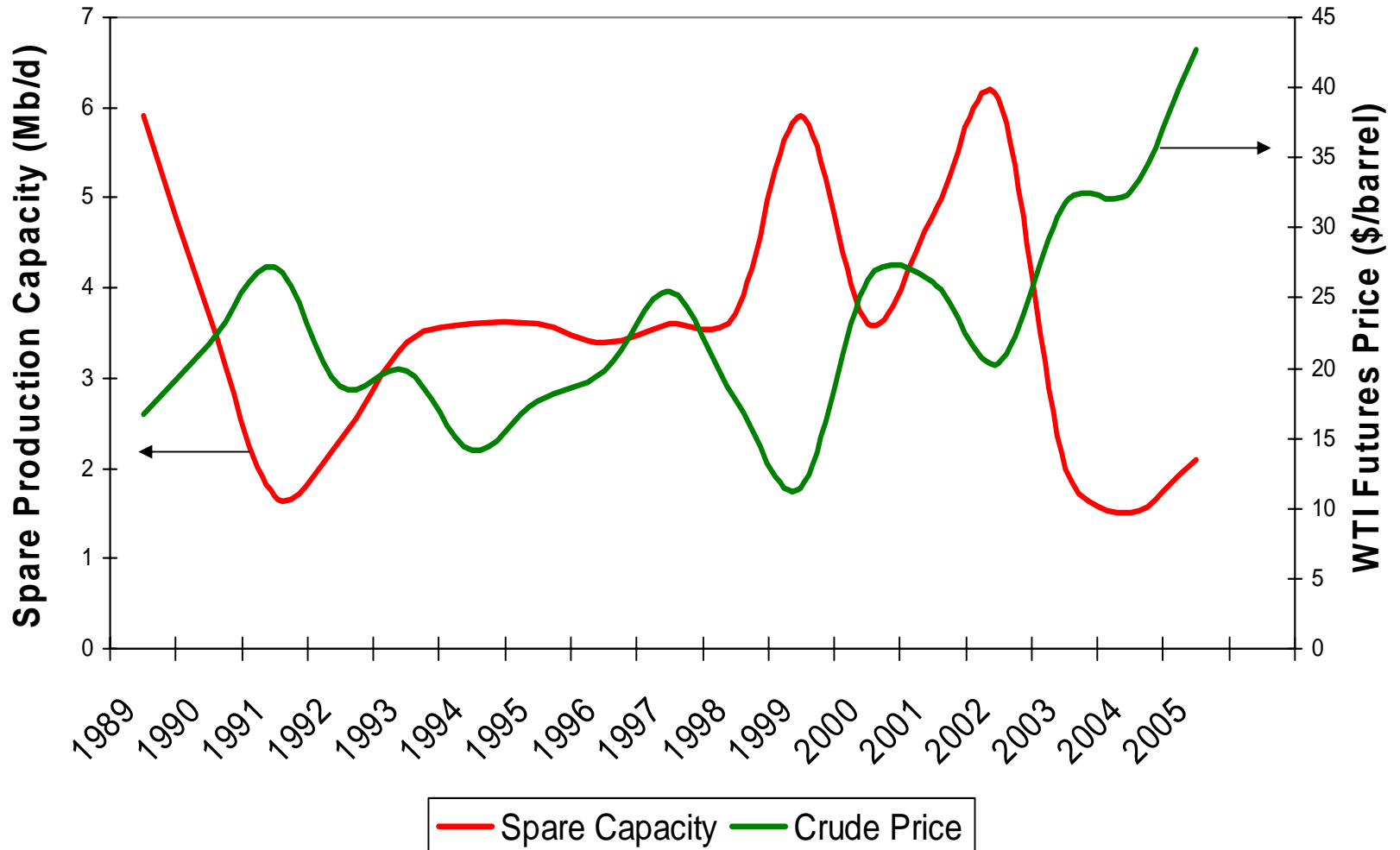
- Changing global contexts
 - Oil and Climate
- Refining our perceptions of China
- Not really a question of collaboration or competition
 - Must be the former, but U.S. must first demonstrate credibility

Changing Global Oil Context

➤ INSECURITY

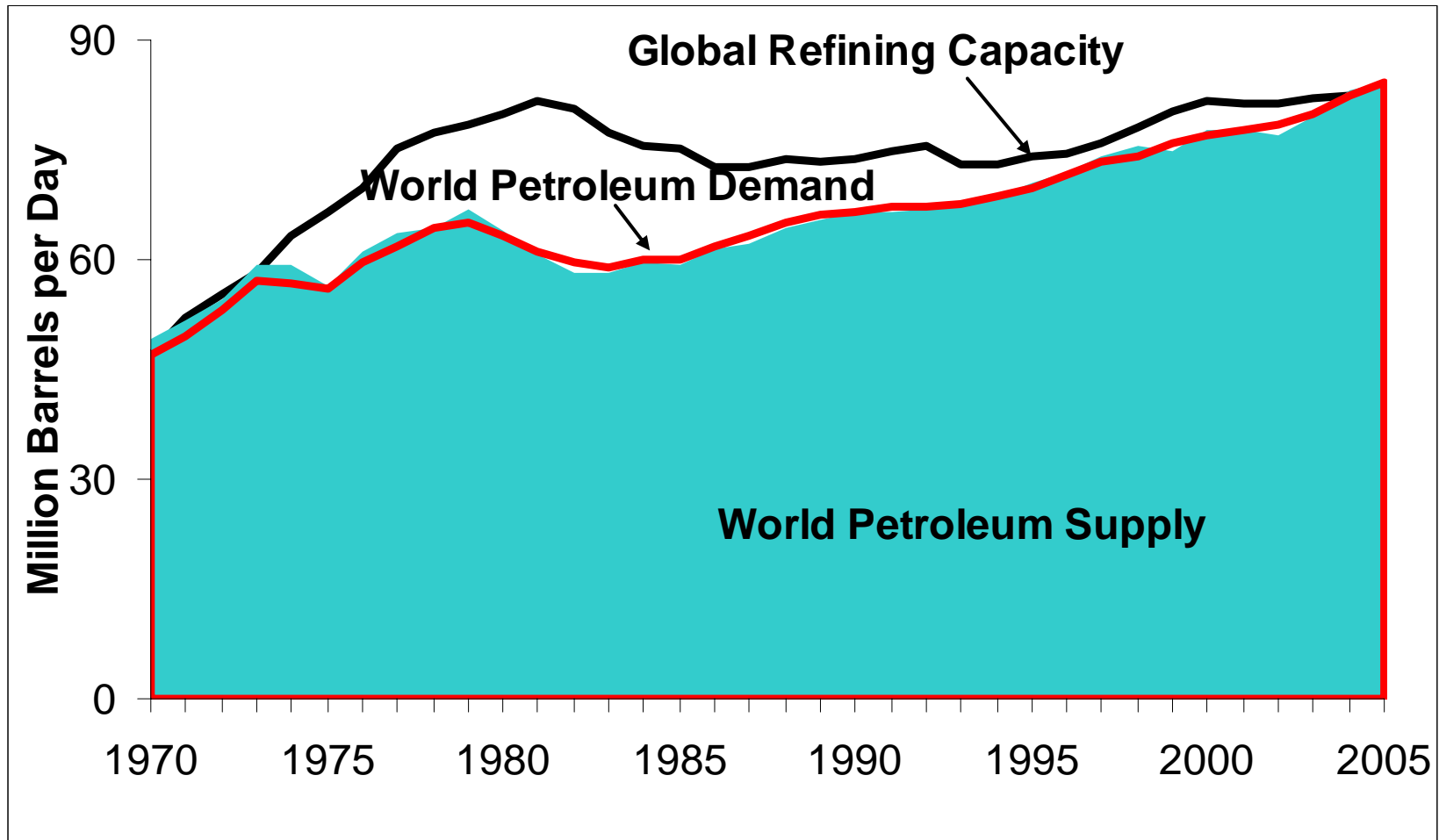
- Tight markets: structural or temporary cycle?
- Increasing dependence on ME and Saudis
- States vs. markets
- Threat of disruptions likely to increase

Spare OPEC Production Capacity vs. Price

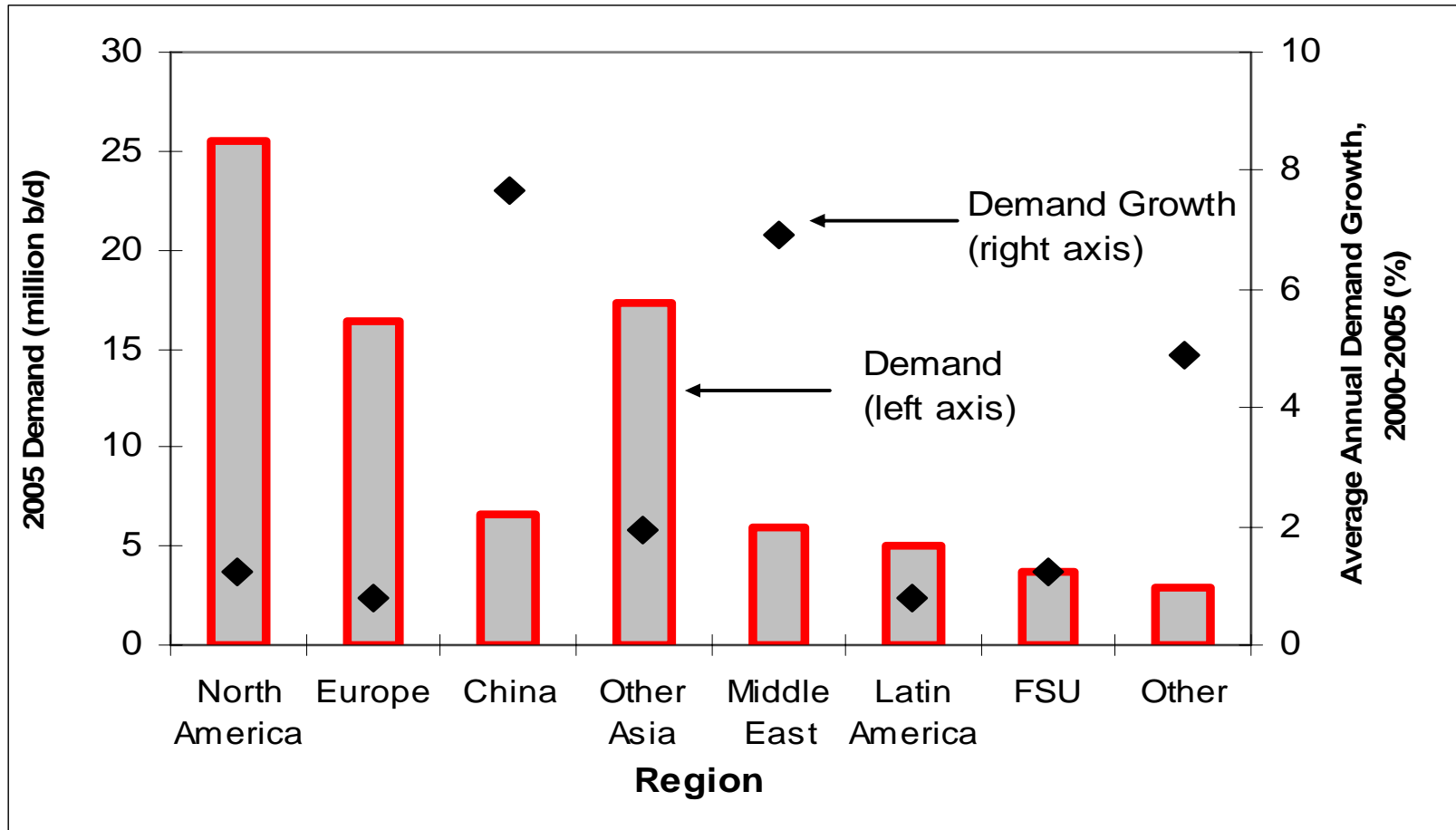


Historically low spare production capacity explains much of the price rise.

Surplus Oil Refining Capacity

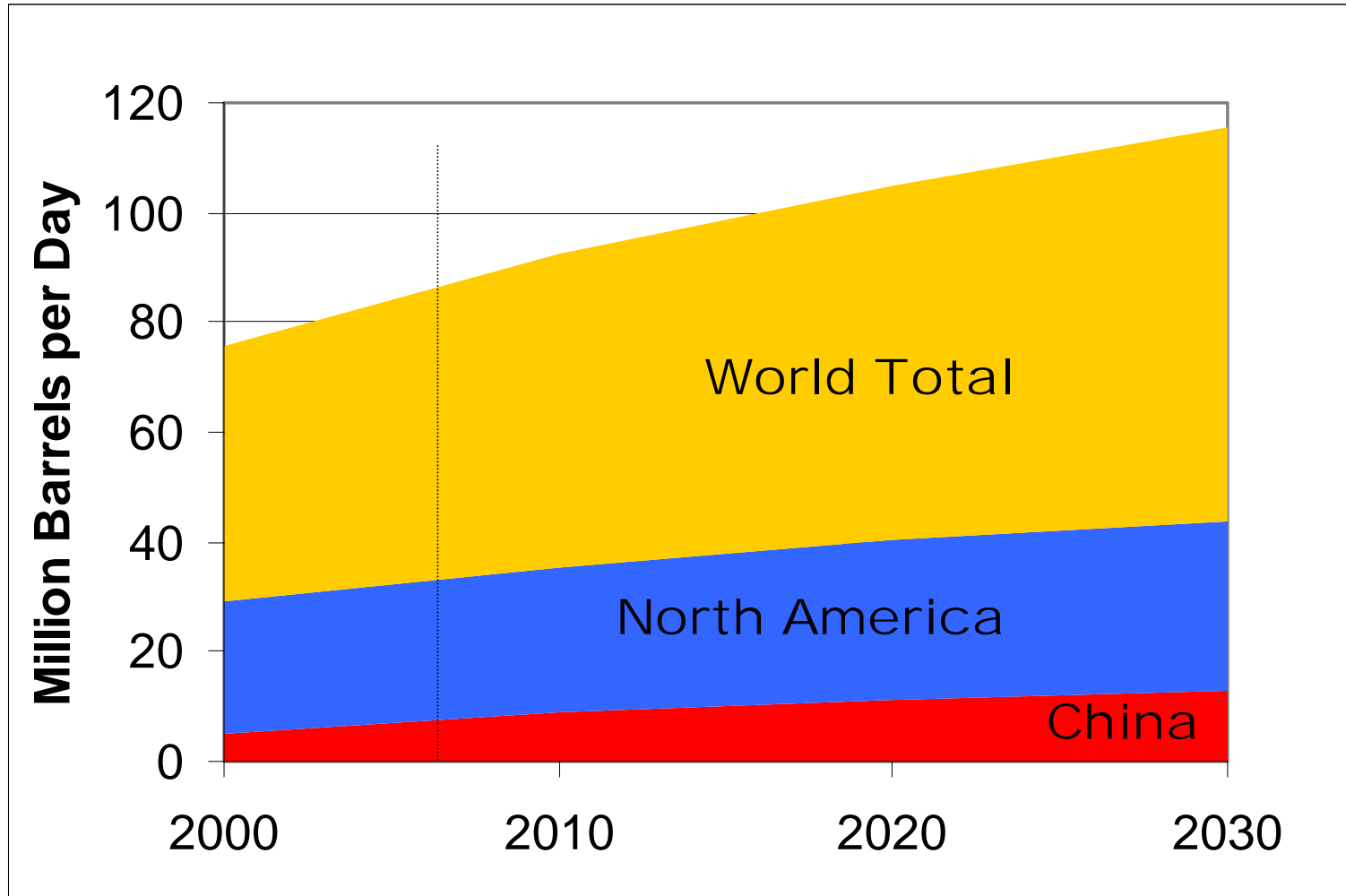


Crude Oil Demand and Growth



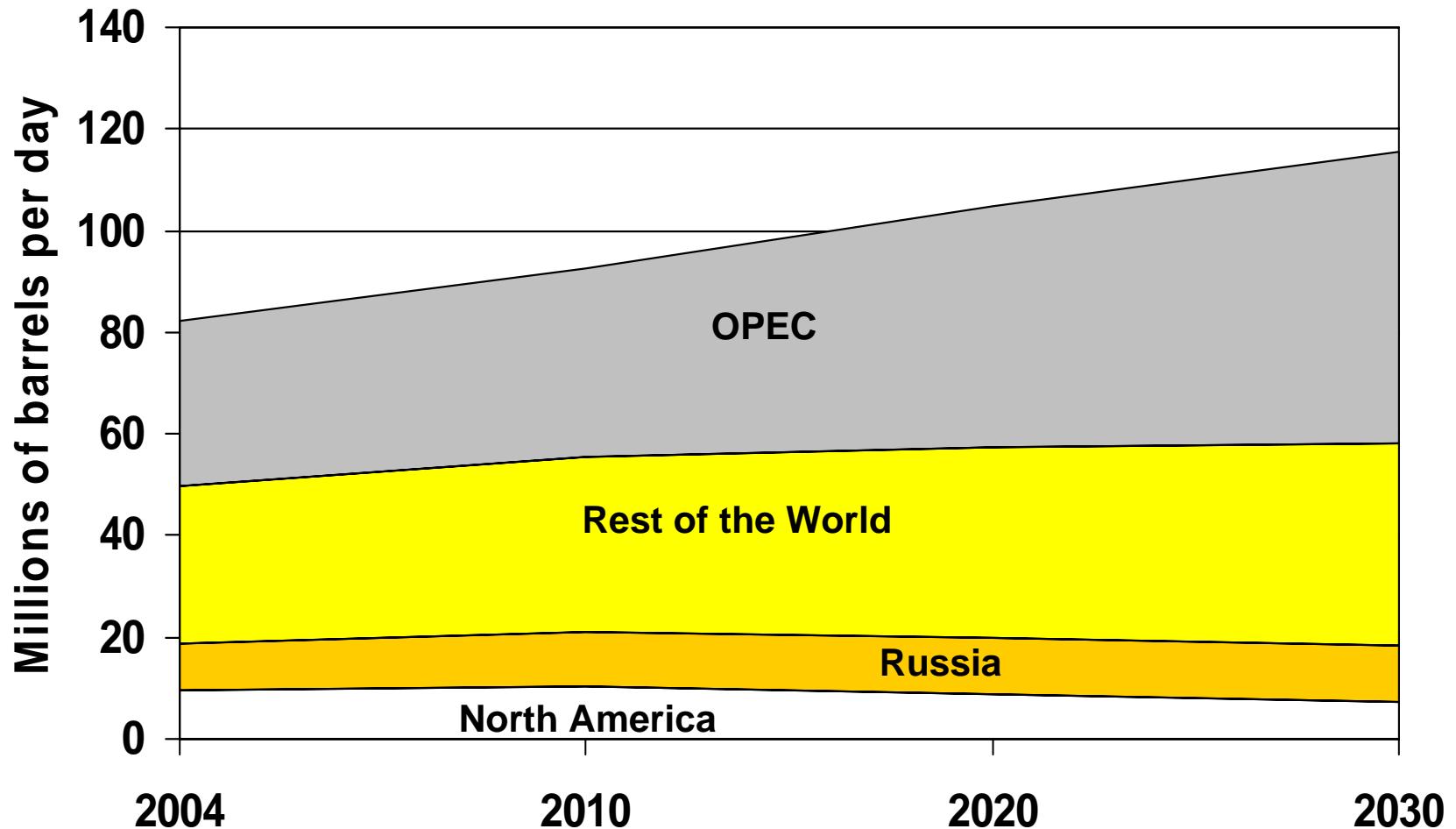
Chinese oil demand growth has averaged over 7 percent annually since 2000, yet the U.S. still consumes three times as much as China

BAU Oil Demand Forecast

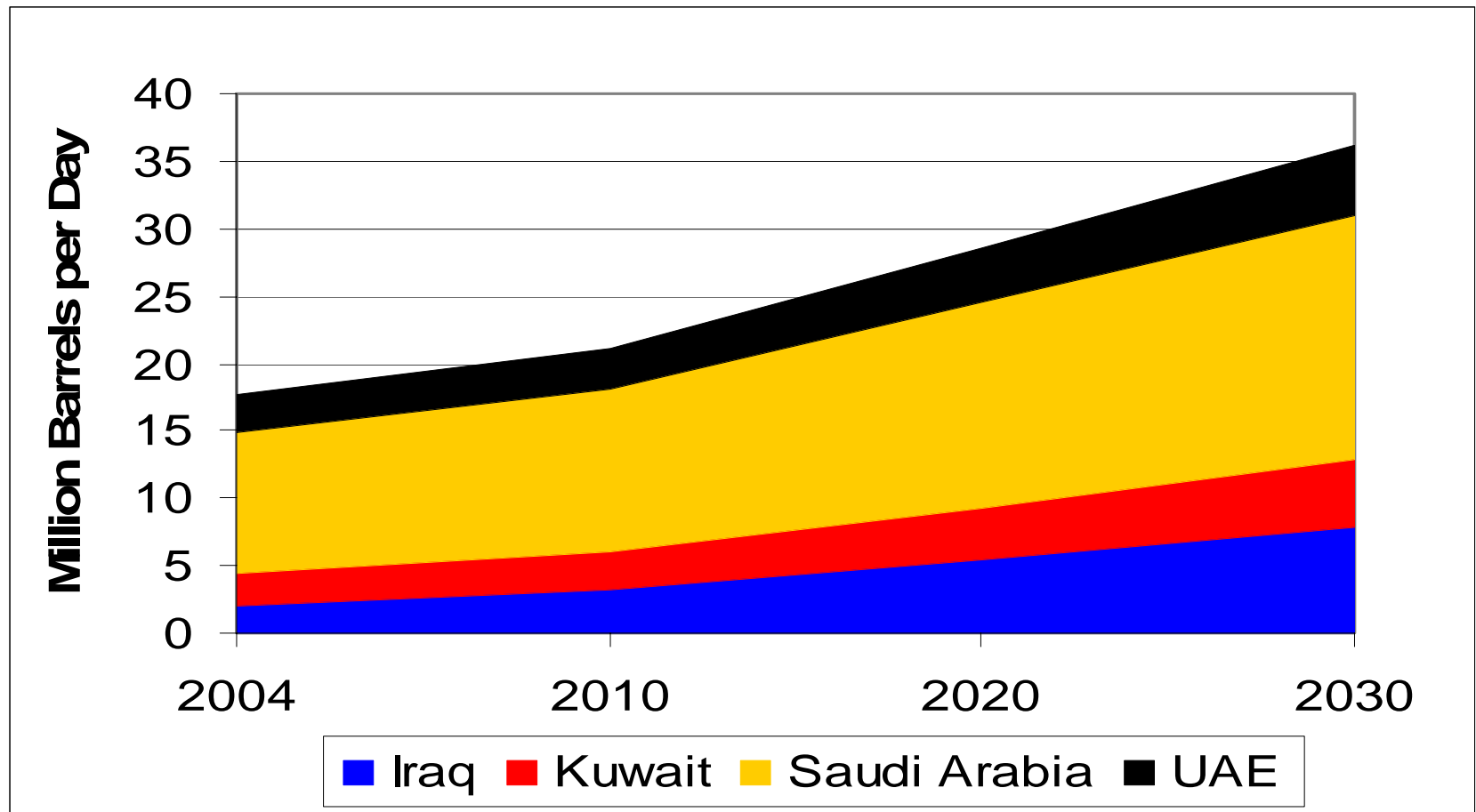


Global demand is projected to grow from 84 mb/d to 115 mb/d in 2030.
This is unsustainable.

Forecast of Oil Production Sources



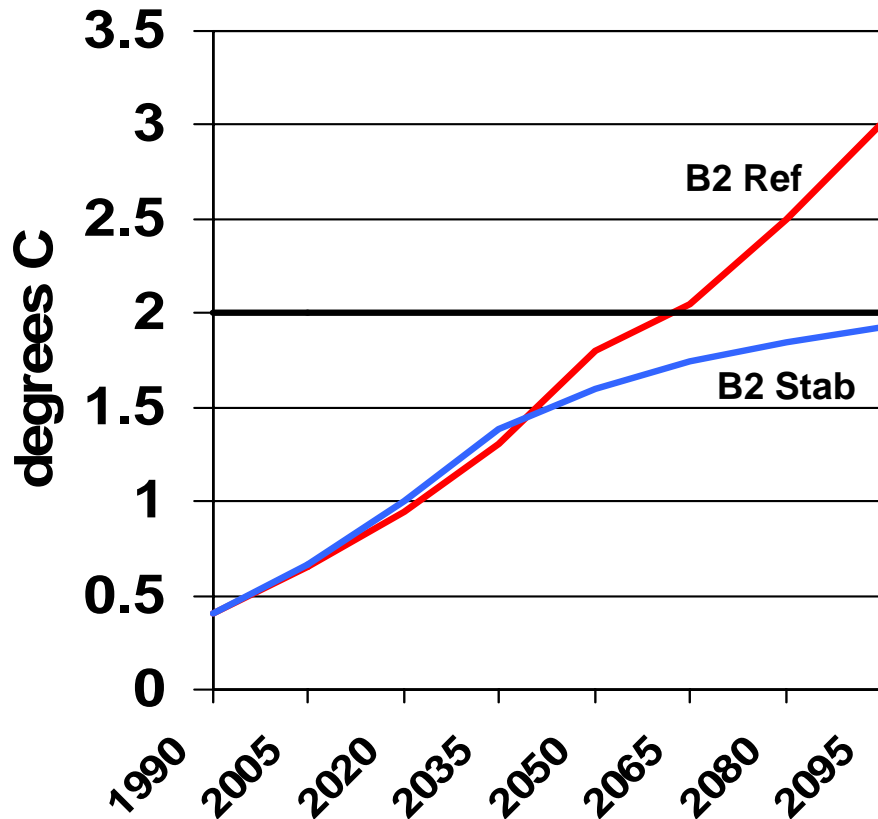
Anticipated Oil Production in Key Middle East Countries



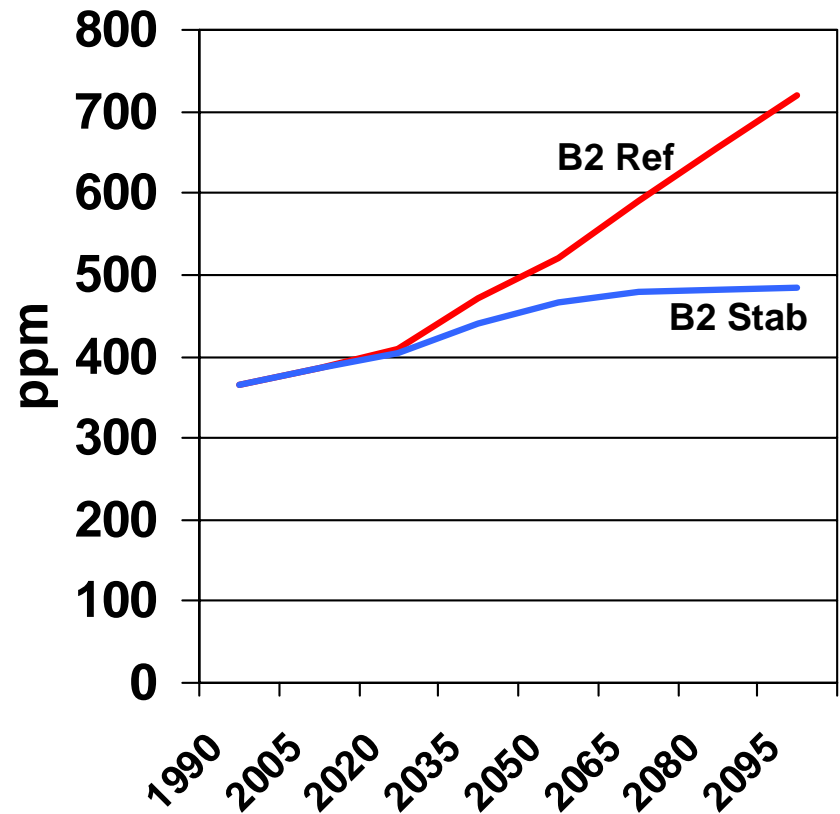
Saudi Arabian output to double. Iraqi production to boom. Are we prepared for this dependency even if physically possible?

One Version of the Climate Challenge

Global Mean Temperature Change From Pre-Industrial



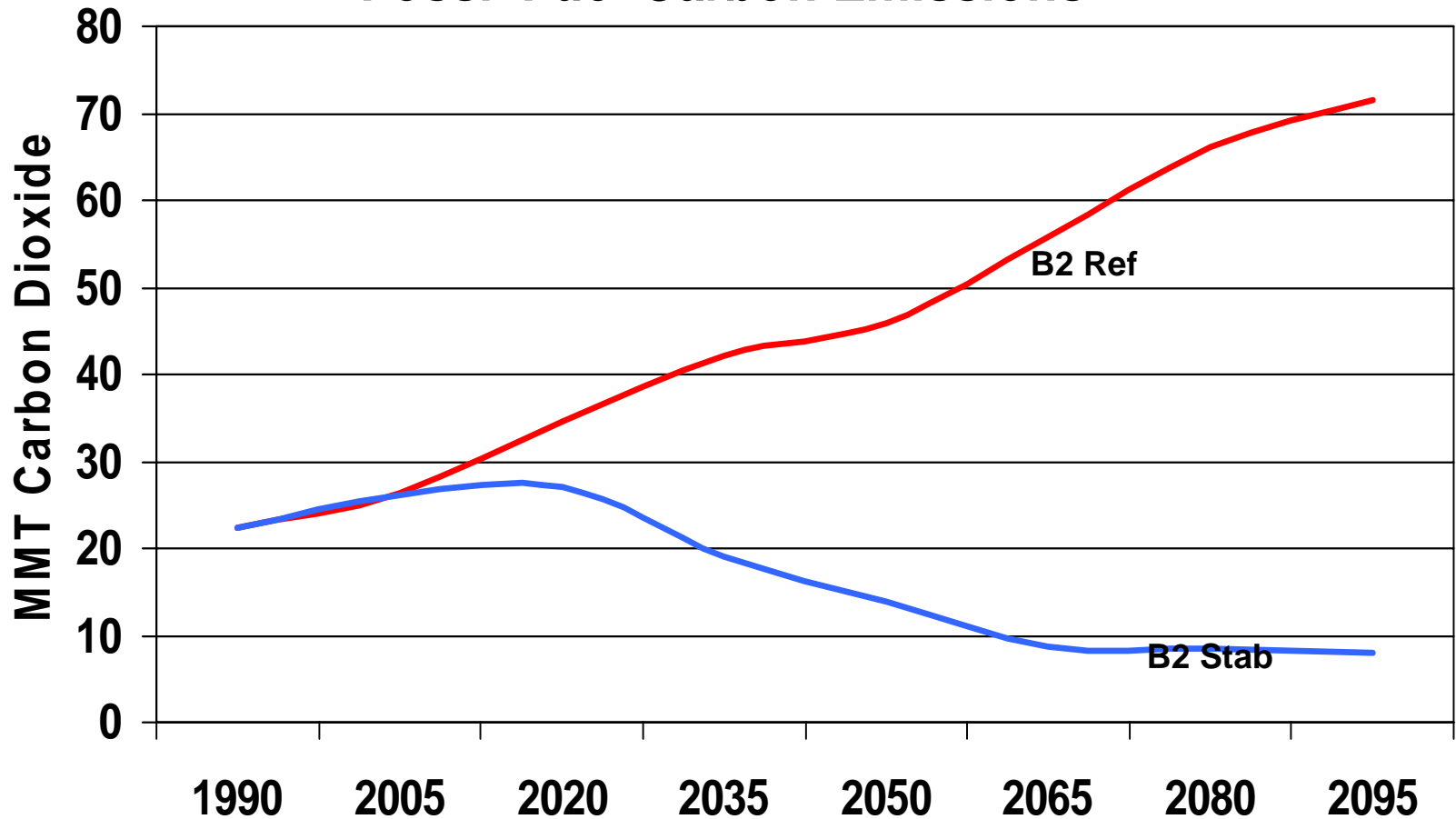
CO2 Concentration



Source: J. Edmonds, Battelle, 2004.

Global CO₂ Emissions

Fossil Fuel Carbon Emissions



Global emissions must begin declining within 15 years.

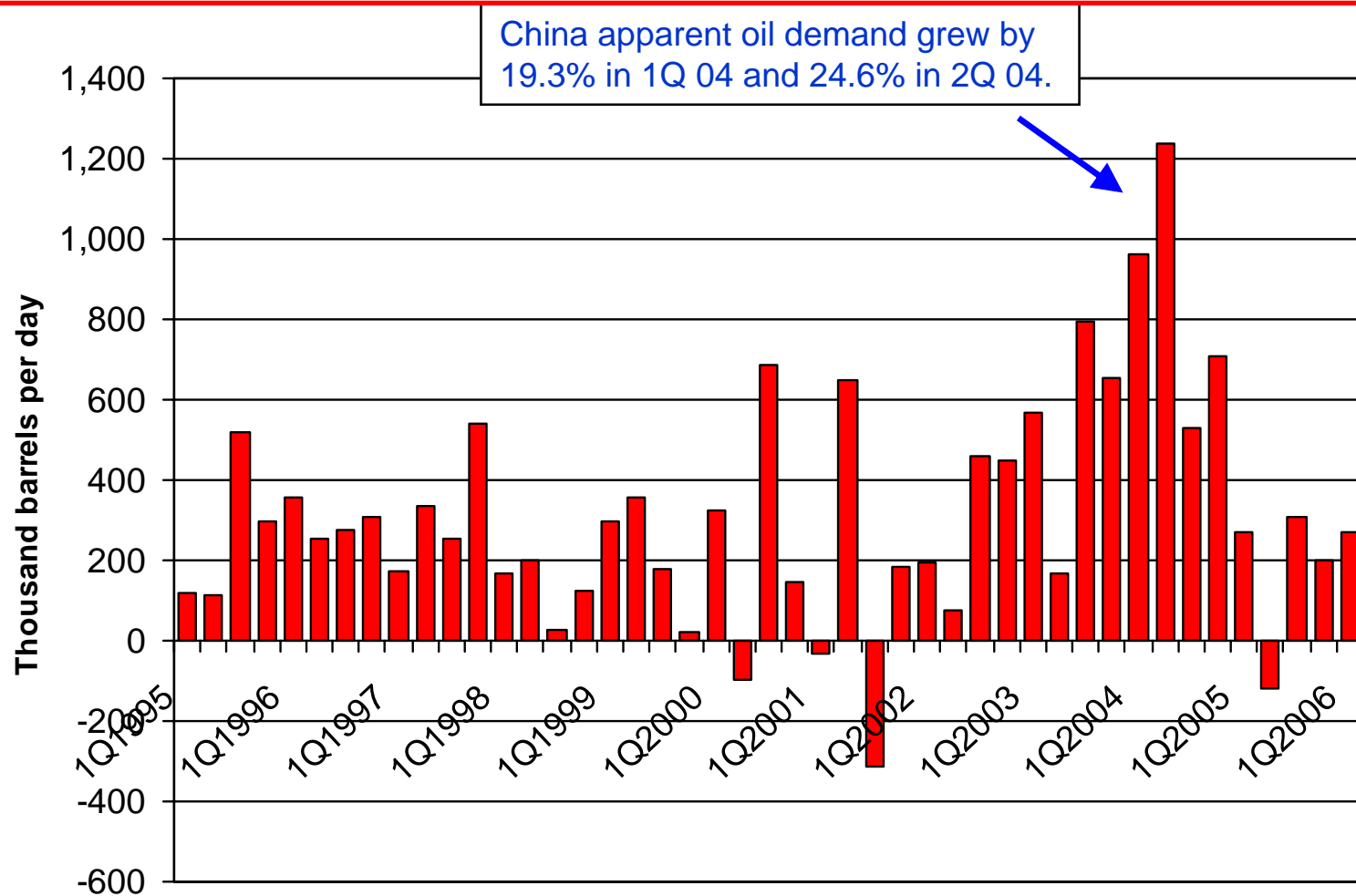
First Conclusions

- BAU in oil and climate not sustainable
- Cannot deal with them independently
 - Coal liquefaction, tar sands, GTL
- U.S. and China must be part of solution

Perceptions of China

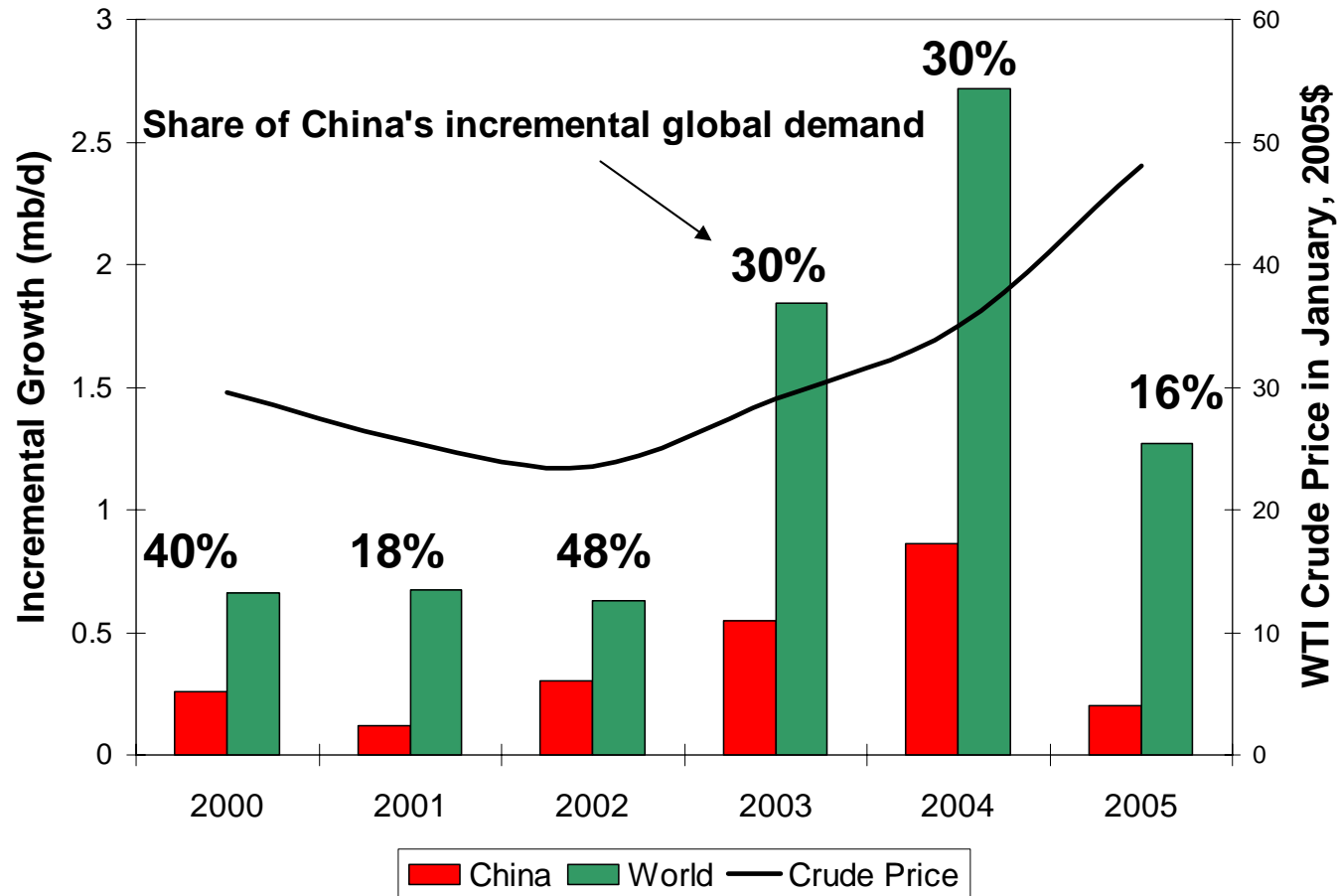
- 1) Source of high global oil prices
- 2) Destabilizes oil markets through overseas asset acquisition binge
- 3) Intransigent on climate negotiations
- 4) Friend or foe: Responsible member of global community or otherwise?

1) China's Surging Oil Demand



Need for back-up power generation drove substantial part of recent surge.

1) Share of Incremental Growth

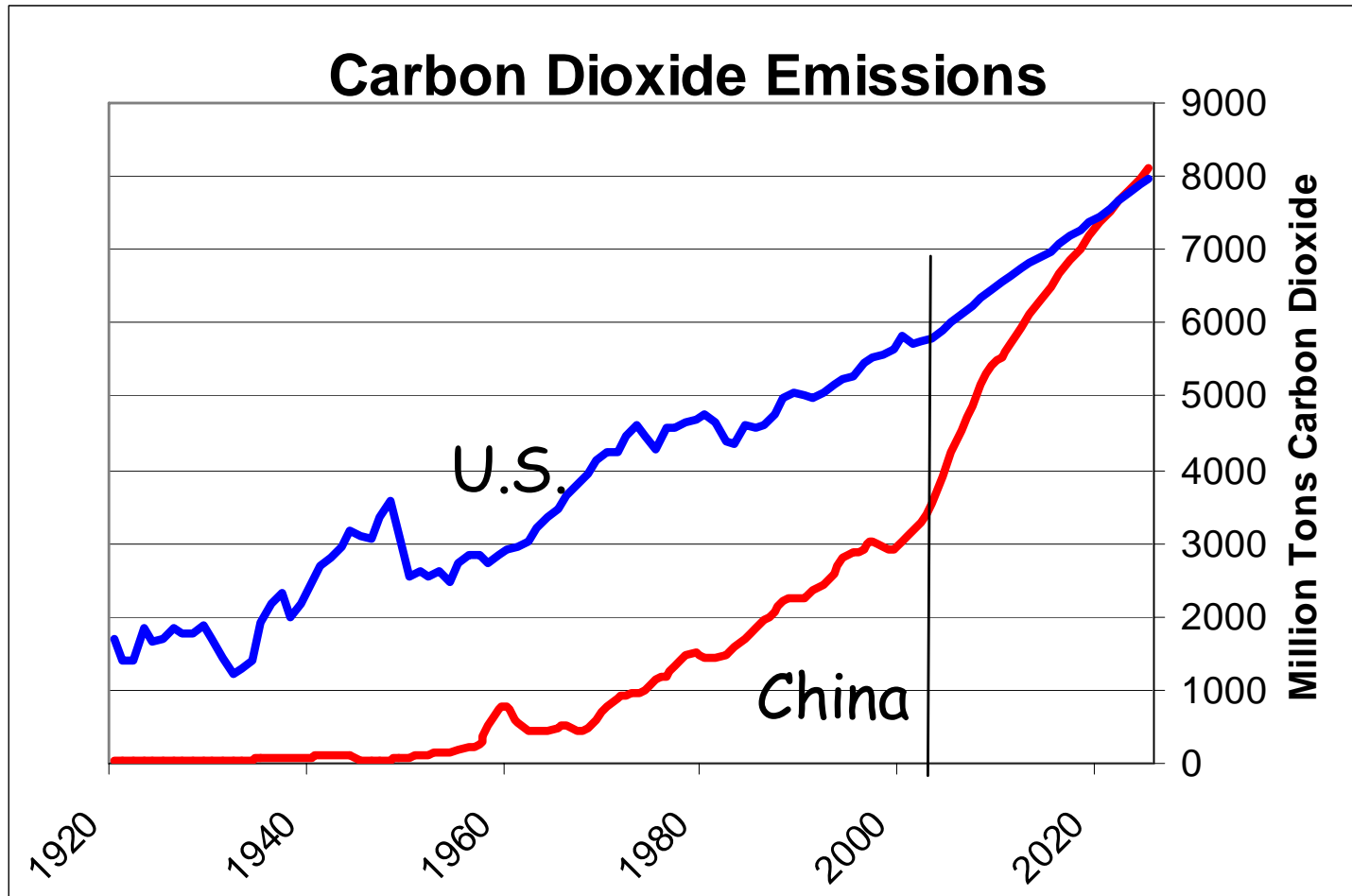


Is China unfairly blamed?

2) Locking Up Global Oil

- Impact of Chinese NOCs Abroad
 - Very active in Africa, ME and SE Asia
 - Limited control of fungible commodity volumes
 - Investment in “rogue” states and implications
 - Competition for assets raises costs, tension
 - Marginal increase in global output
 - Governance, safety, environmental standards

3) Comparing CO₂ Emissions



Cumulative Emissions, 1920-2025:
China 217 GtCO₂, US: 447 Gt CO₂

4) China: Friend or Foe?

- Serious questions about China's domestic political reform and external ambitions
- Goal: "Peaceful development"
- Actions: Not convincing to everyone
- Challenge ourselves to "see" China
 - Most change opinions
- Self-fulfilling prophecy?

Reasons to Engage China

- Economies are intimately linked, and broadly complementary
- Face reality of globalization and need for relentless innovation
- Further influence China's emergence into world system
- Public goods cost of not-engaging?
- Challenging, but no other option

Challenges for Sino-U.S. Energy Cooperation

- No current counterweight to U.S. Congress
- Previous official collaborations half-hearted
- Domestic Chinese challenges and insecurities



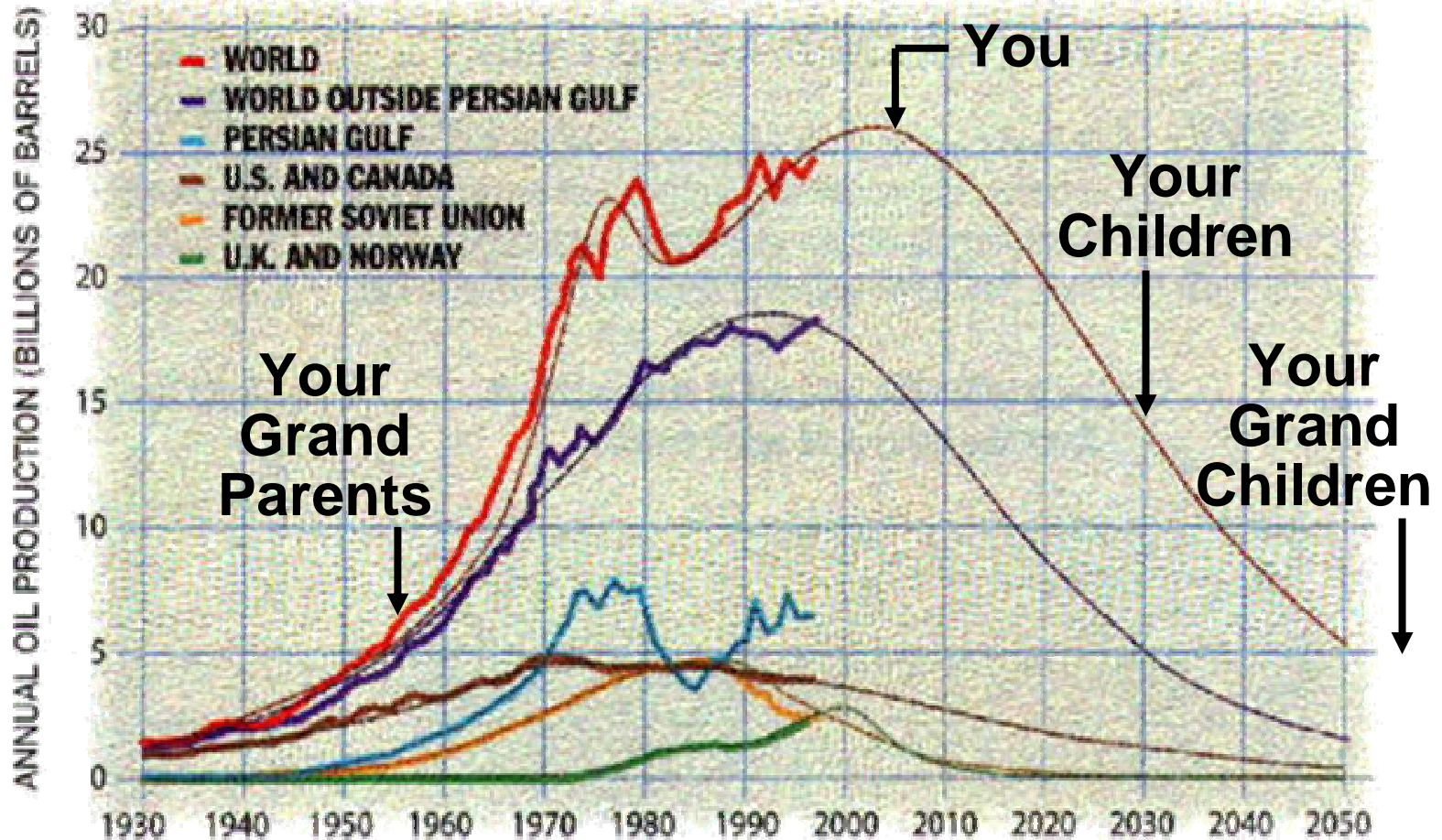
Action Items

- Confidence building, U.S. acts first:
 - US oil (CAFÉ, fuel tax, biofuels, etc.)
 - Chinese energy data issues
 - Serious dialogue on shared concerns
- After U.S. demonstrates sincerity:
 - Fast-track IEA membership
 - Dialogue on how China takes on carbon commitment
 - Efficiency, natural gas, bio-energy, CCS
 - Institutionalized high-level forums

Conclusions

- Energy and climate insecurity to grow
 - Need for simultaneous solutions
- Cost of acting vs. not acting
- U.S. as first-mover
- Need to maintain policy even if prices fall

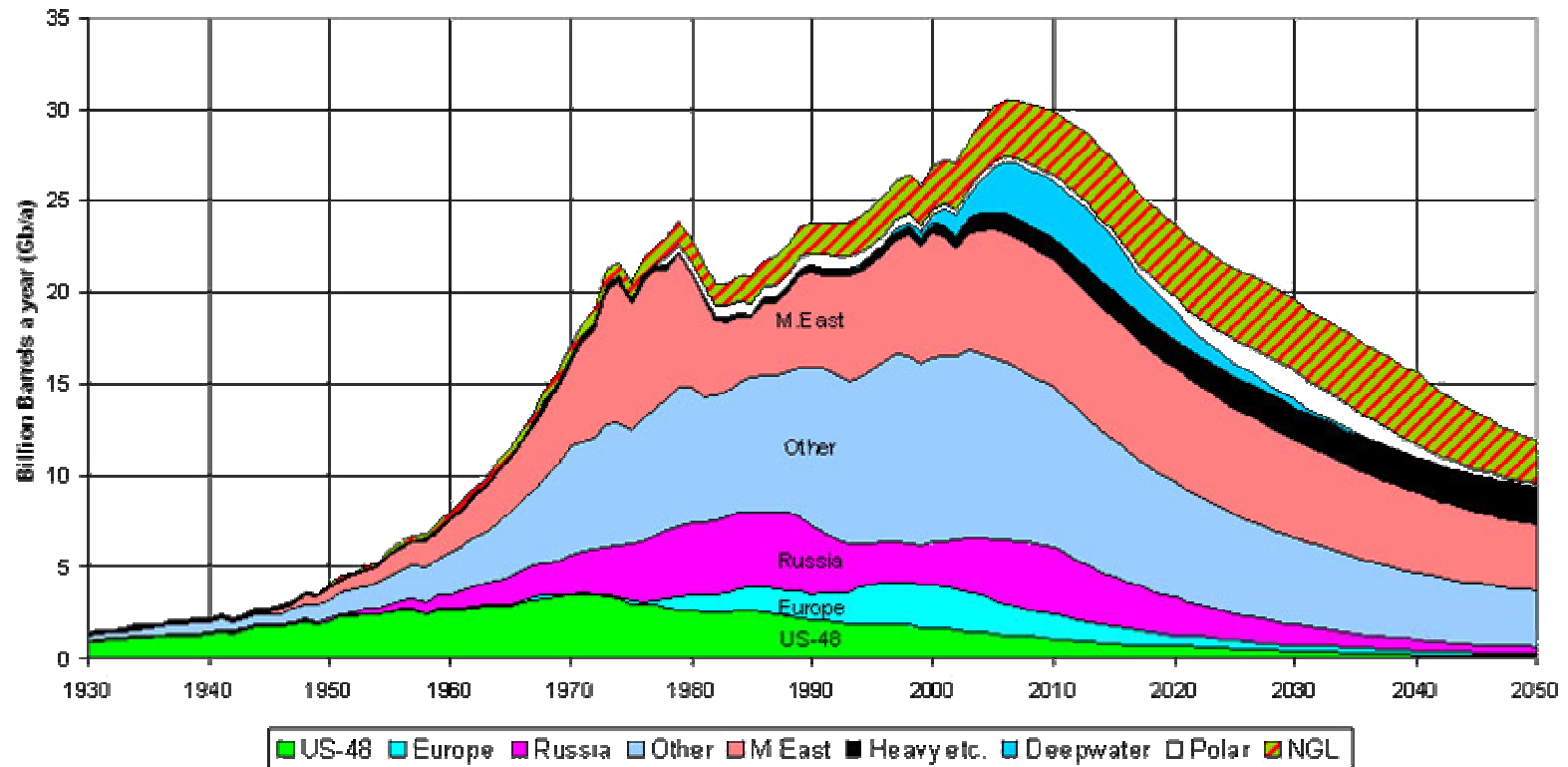
Peaking of World Oil



Source: Campbell, Colin J. and Jean H. Laherrere, "The End of Cheap Oil." *Scientific American*, March 1998.

Campbell Update

OIL AND GAS LIQUIDS 2004 Scenario



Source: Campbell, C. J. <http://www.hubbertypeak.com/campbell/>