

Economic & Policy Dimensions of Climate Change

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(With much help from Henry Jacoby)

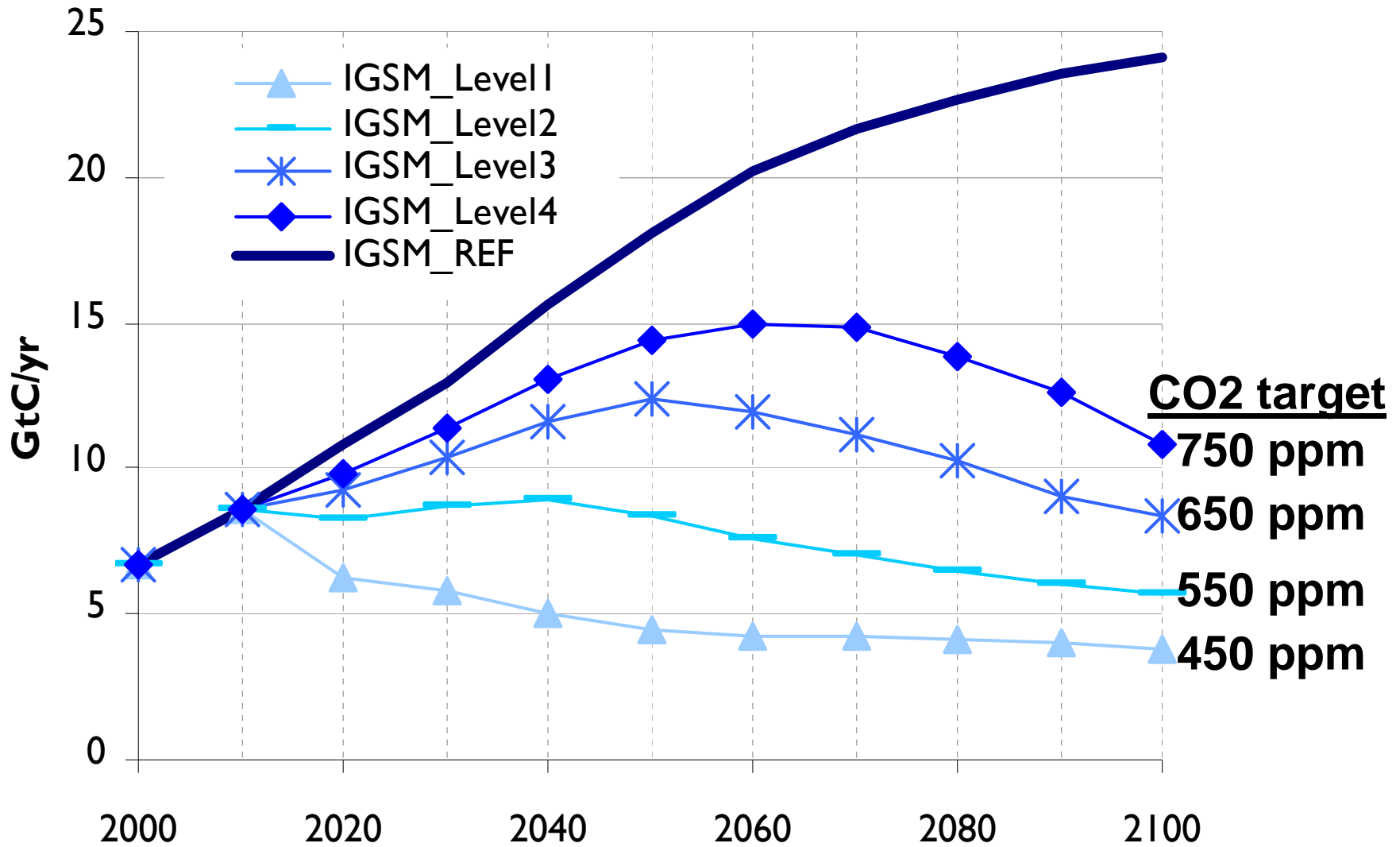
Joint Program on the Science and Policy of Global Change
Massachusetts Institute of Technology

TRB Executive Committee

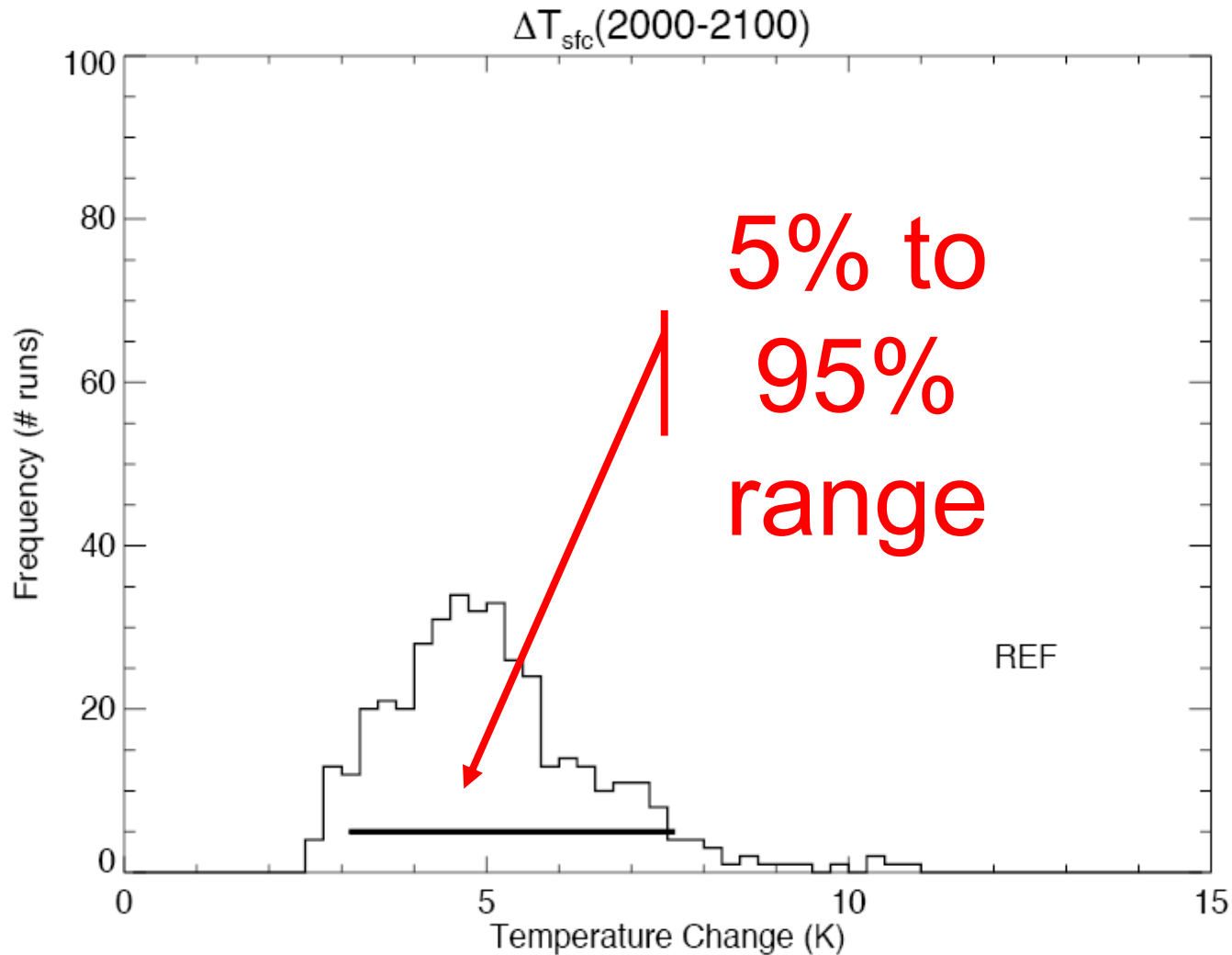
June 13, 2008



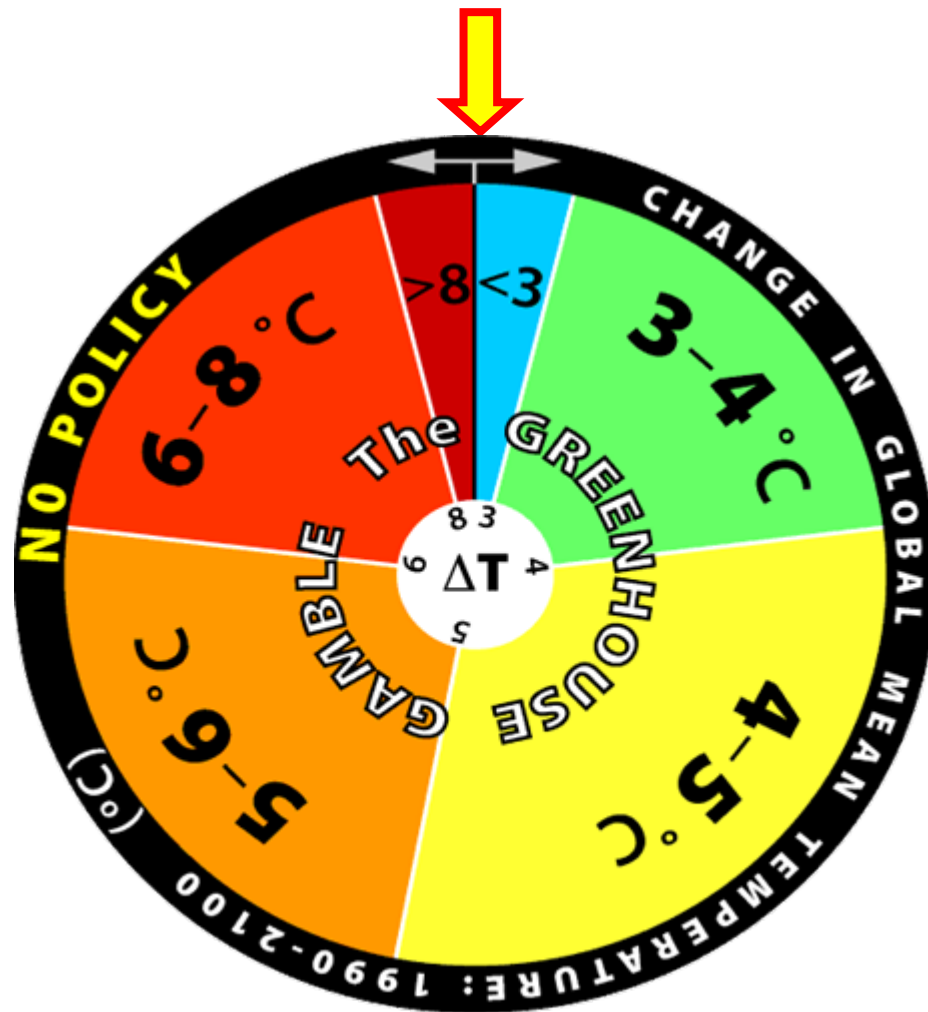
Stabilization Will Not Be Easy



No-Policy Risk is Substantial: Latest MIT Estimate of PDF



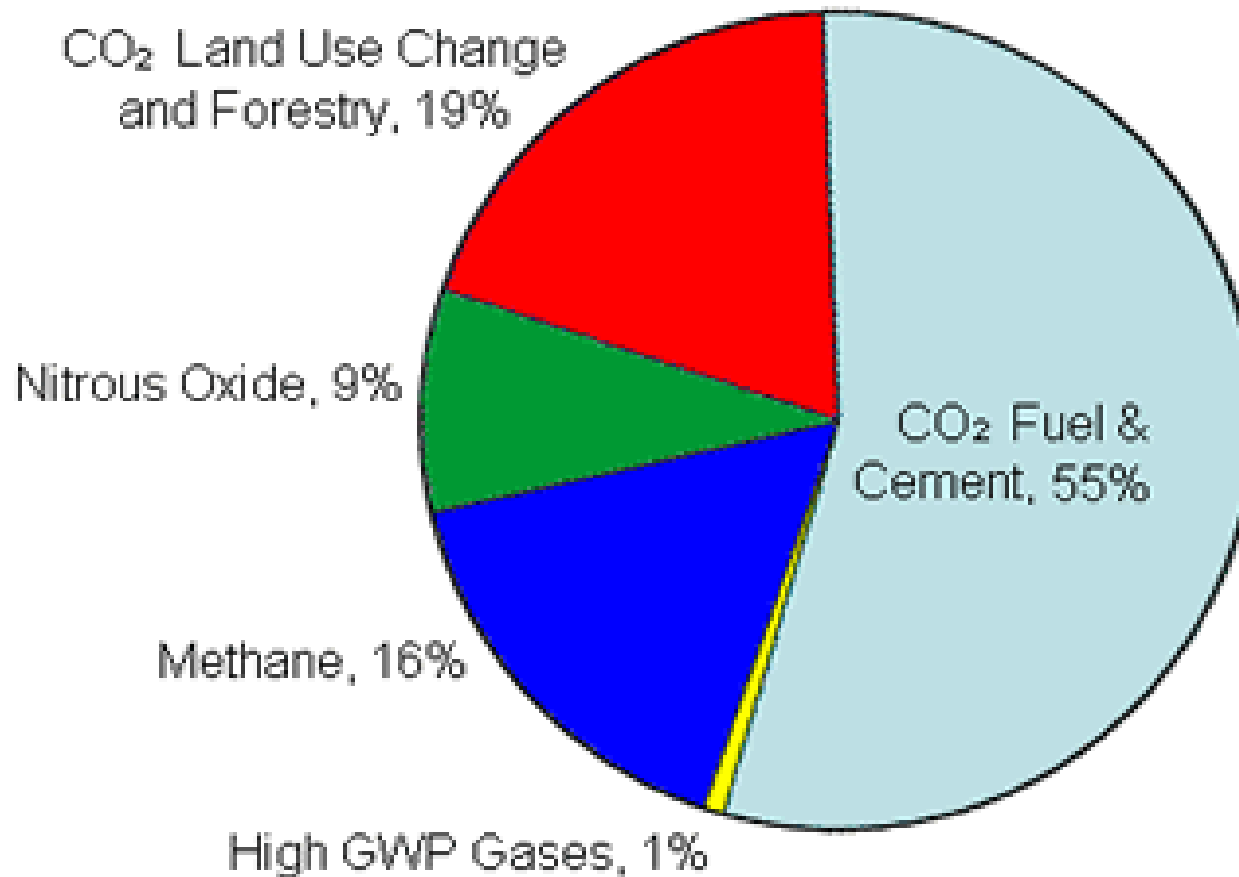
Another Way to Look at It



No policy case

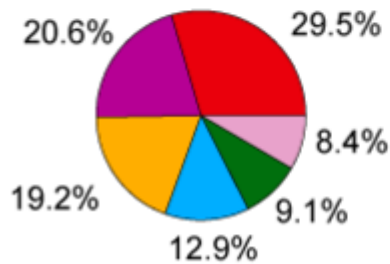
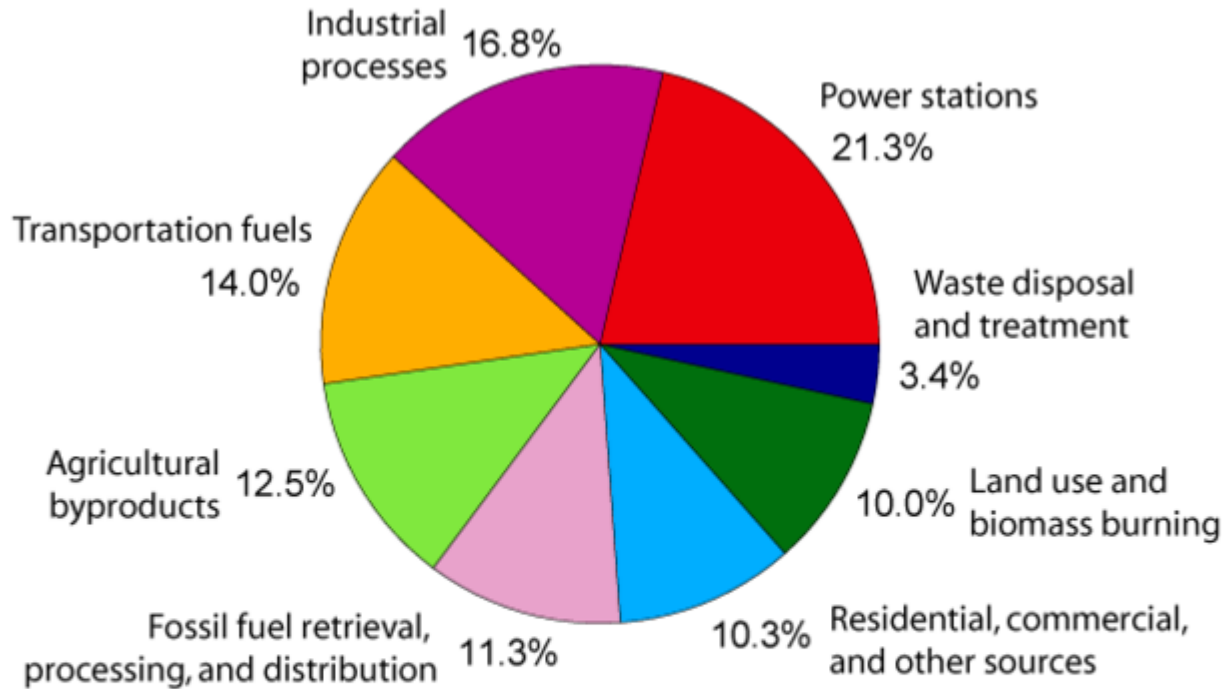
The Problem is Not Just CO₂

Figure 1: Global Greenhouse Gas Emissions 2000

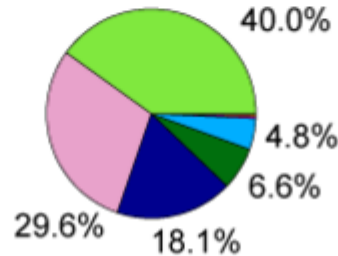


Many Sectors are Involved

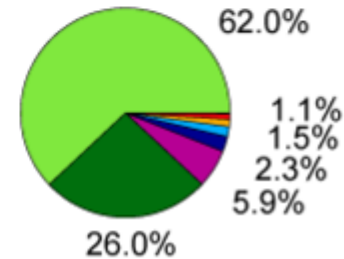
Annual Greenhouse Gas Emissions by Sector



Carbon Dioxide
(72% of total)



Methane
(18% of total)

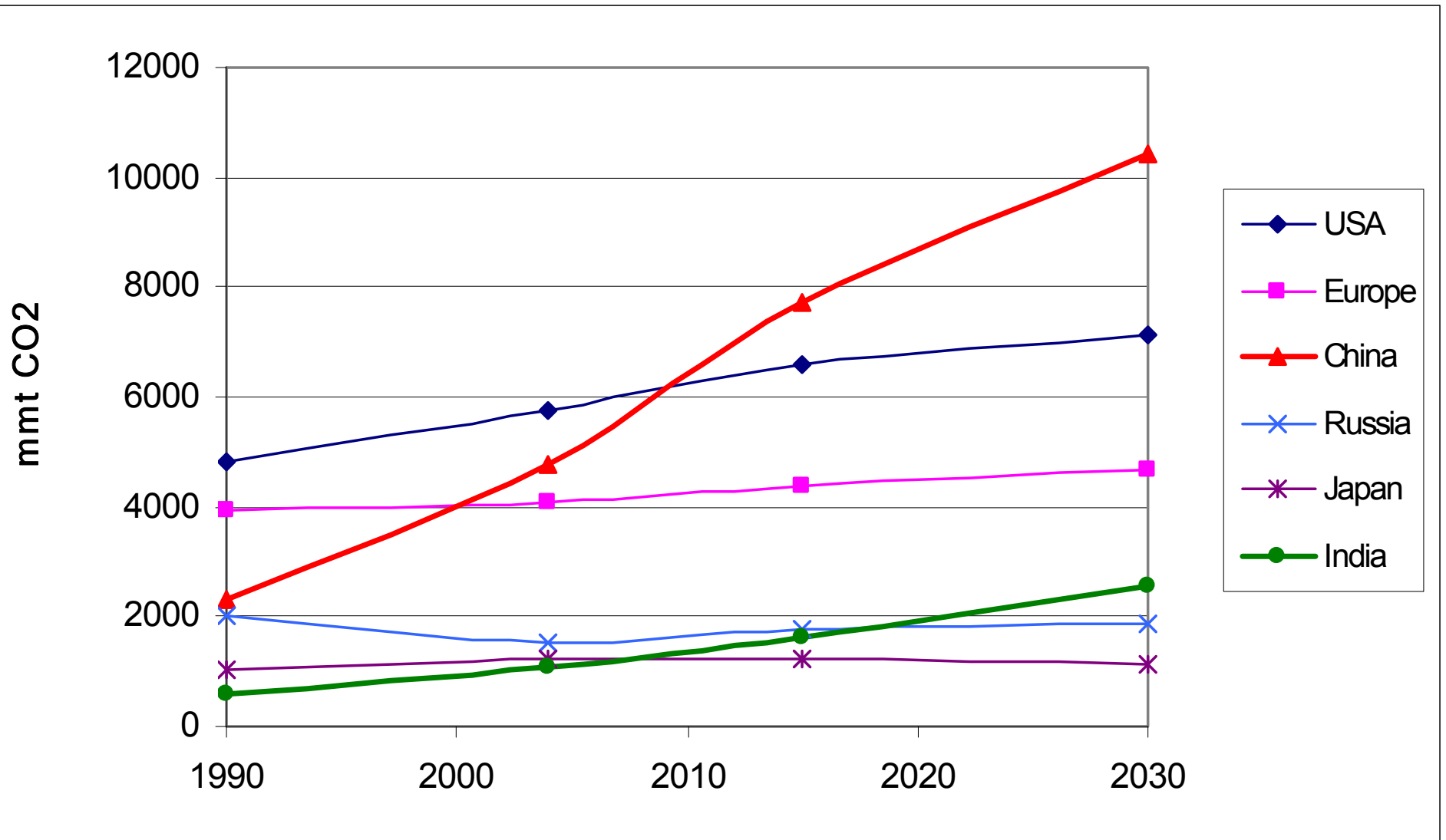


Nitrous Oxide
(9% of total)

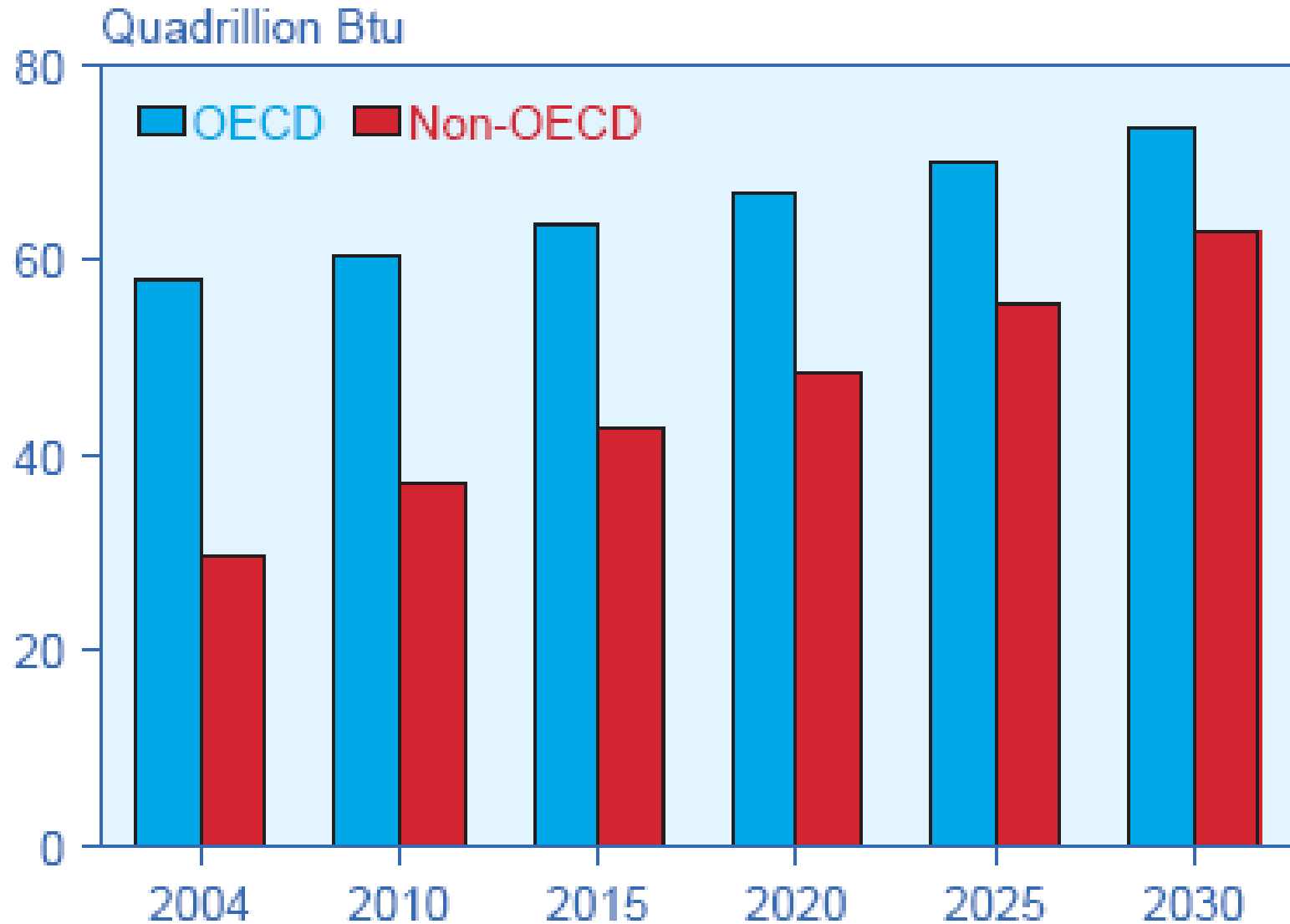
Need Comprehensive, Cost-Effective Mitigation Policy

- Will need big departures from no-policy trajectory
Not feasible if requires huge economic costs
- Thus want to get the cheapest reductions first
Across sectors, margins (efficiency v. use)
Cannot rely on planning to find cheapest
Regulation doesn't stimulate innovation (SO₂)
- Points to incentive-based: tax or cap-and-trade
Pre-FCCC EU proposed efficiency standards
EU now has cap-and-trade, after US SO₂

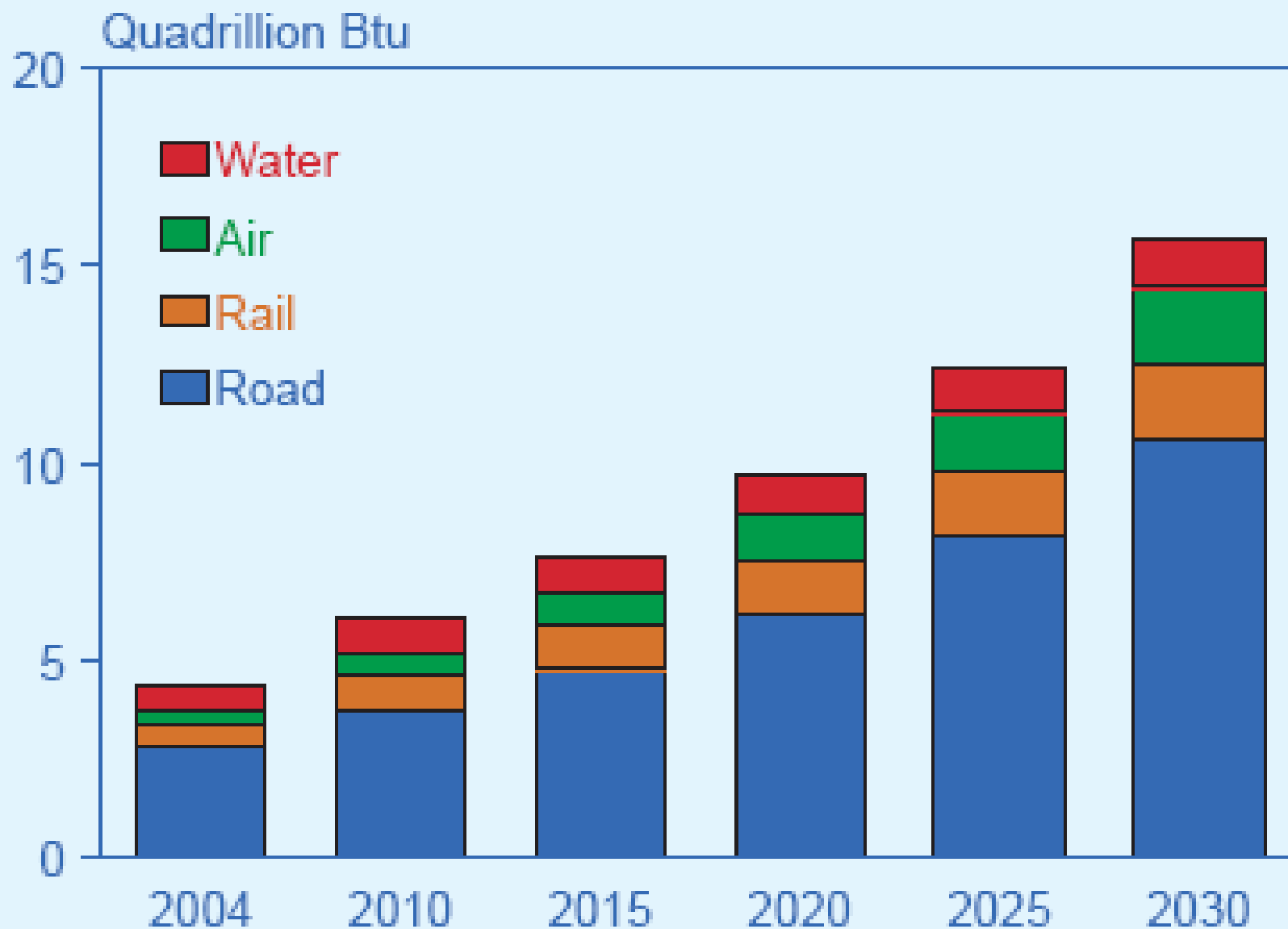
Problem is Global, esp. In Future



Transport Emissions Growing ...



...Especially in China



Fuel Use in Chinese Transport

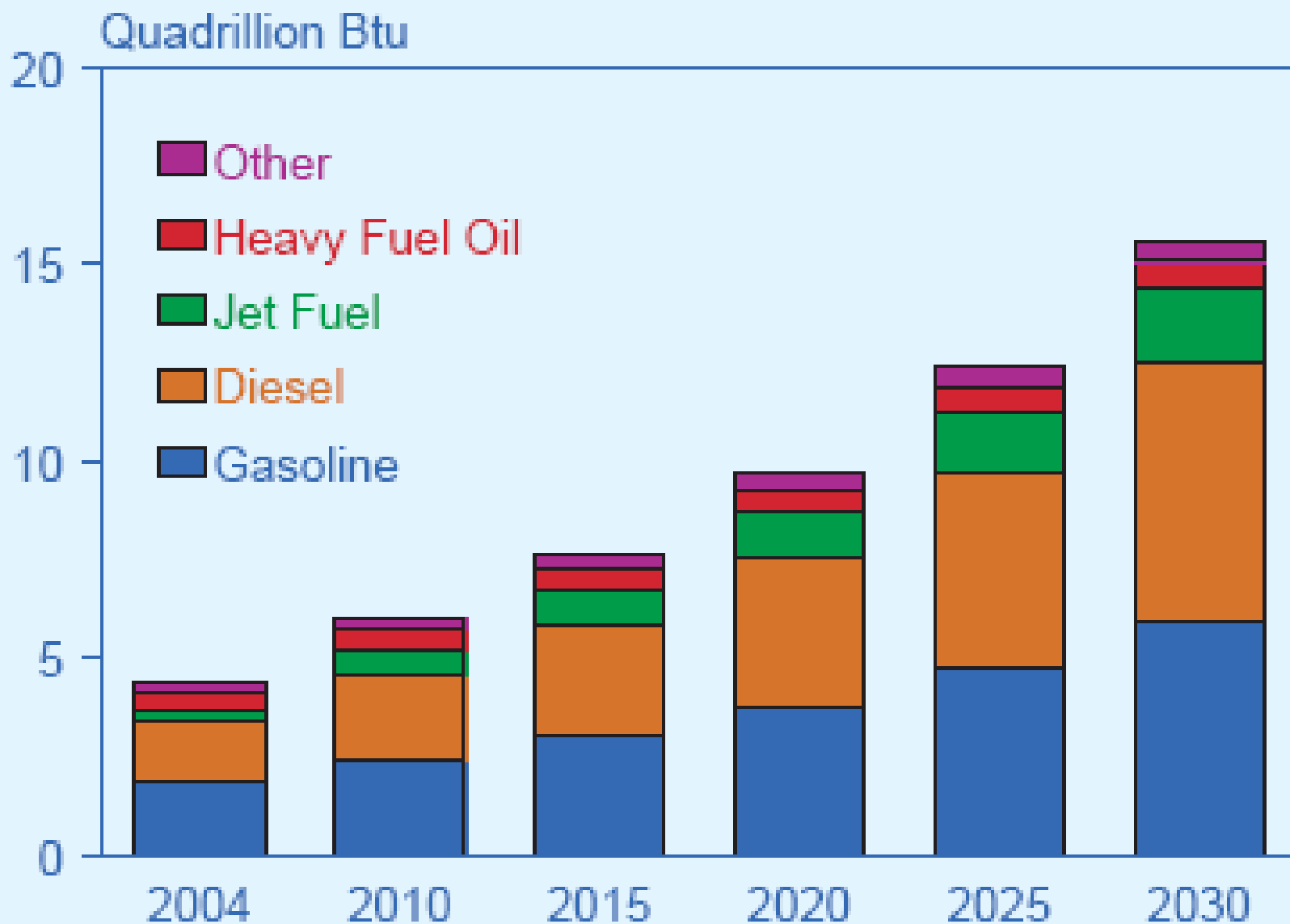
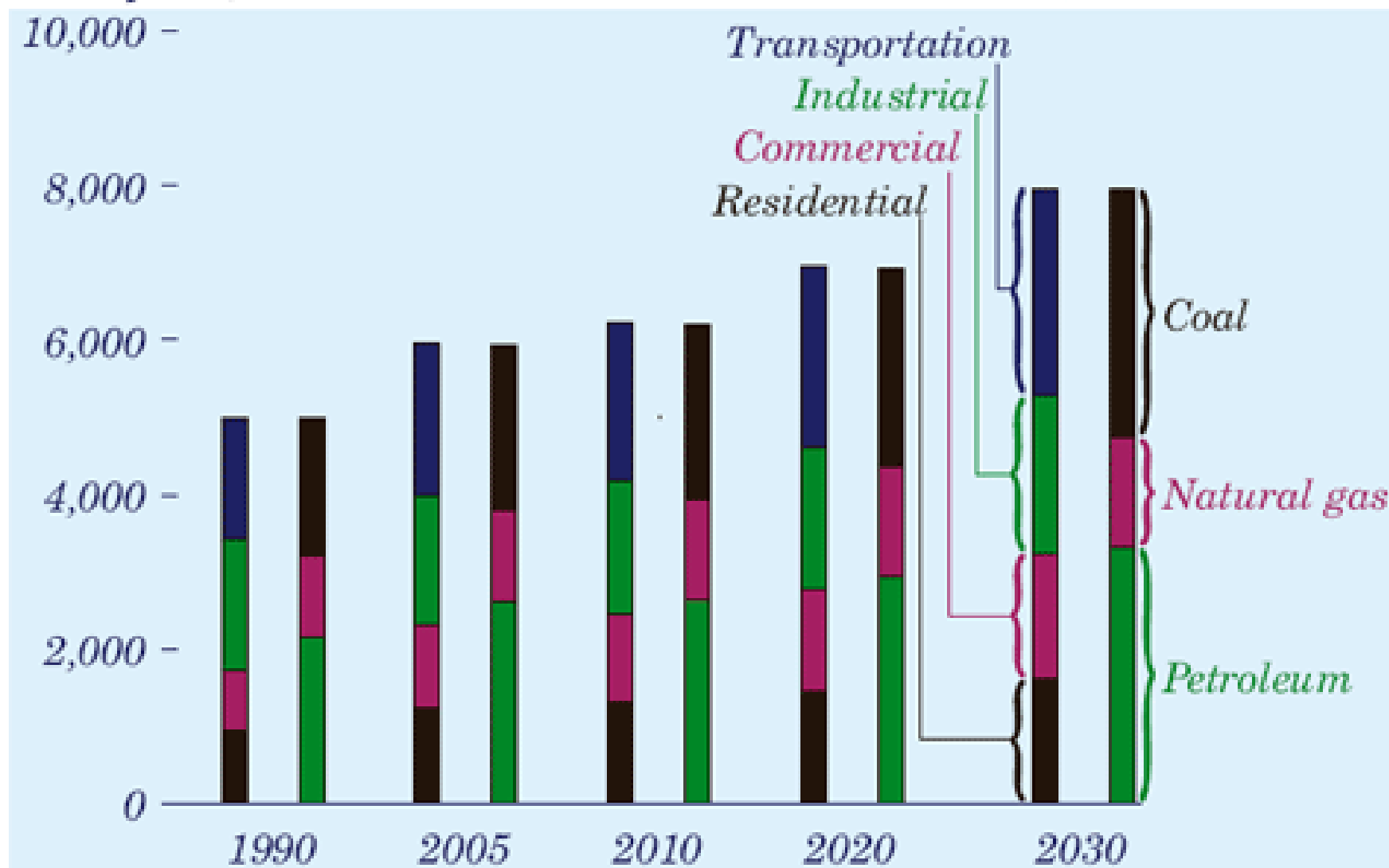


Figure 8. U.S. carbon dioxide emissions by sector and fuel, 1990-2030 (million metric tons)



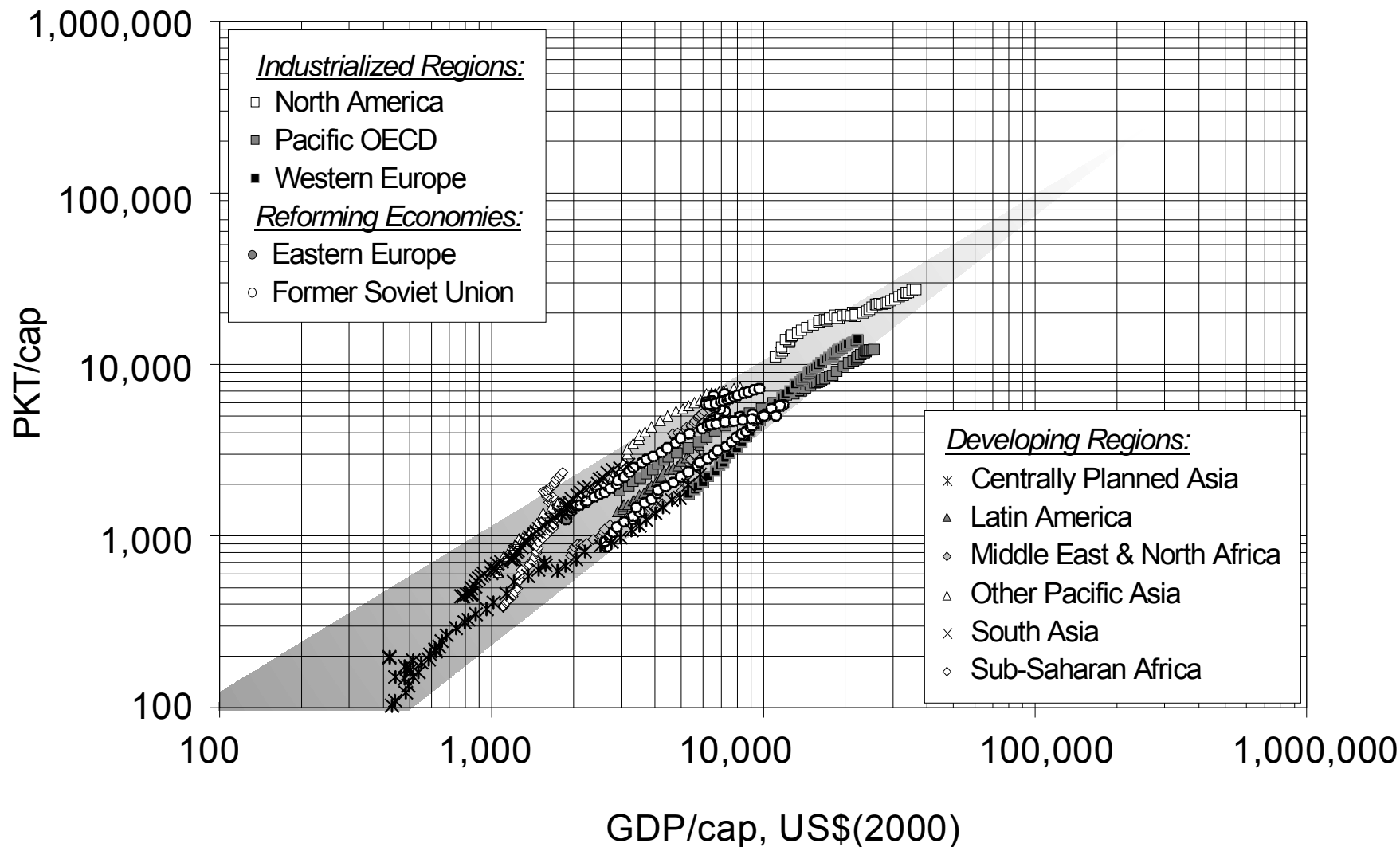
No Simple Route to Global Action

- Developing Nations: Poverty, Historical Causation
- Have so far refused to commit, but softening?
- No hope unless US follows other rich countries
- Porter hypothesis: will yield tech leadership, \$\$..?
- If we lead & developing world doesn't follow...?

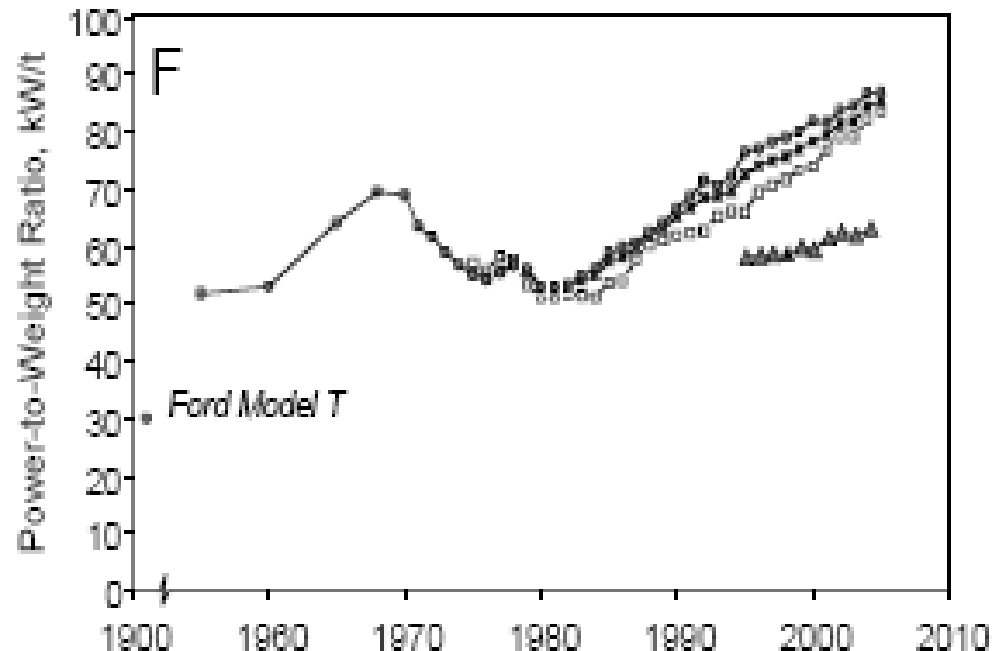
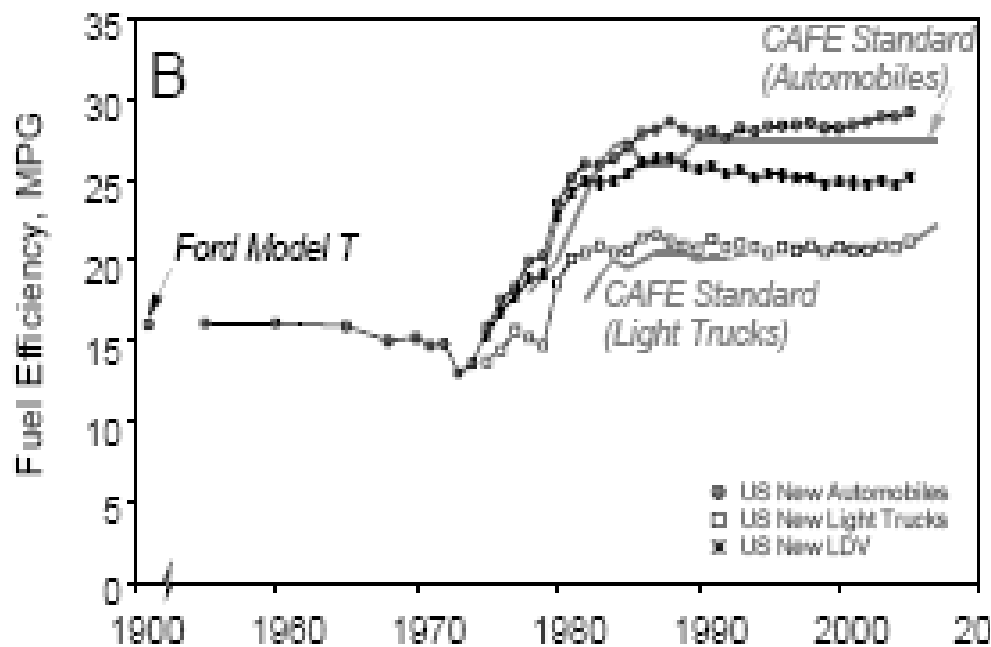
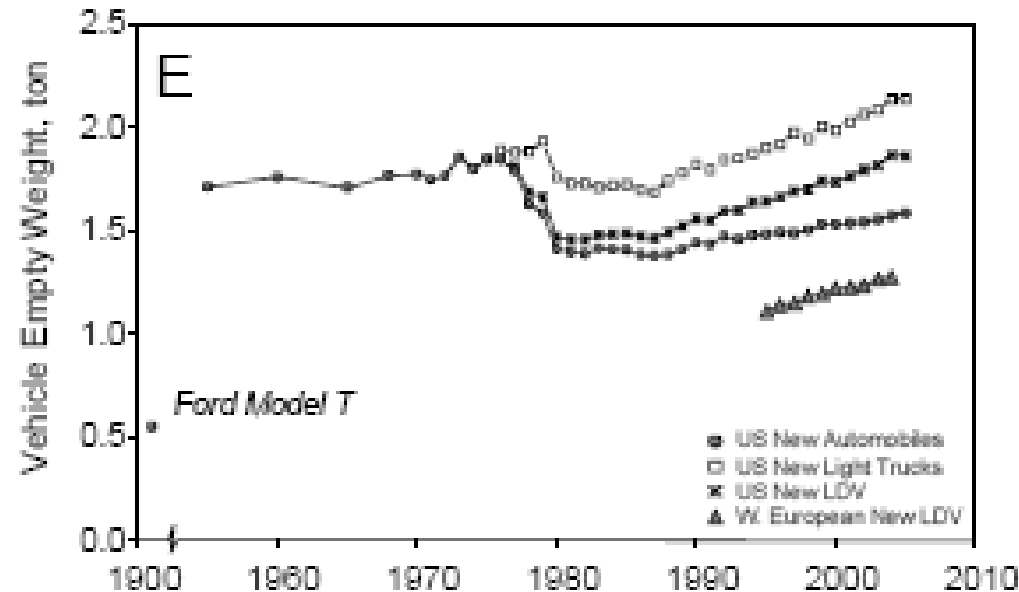
A Transportation-Specific Policy?

- Clearly want R&D where high potential payoff
- Stricter mitigation (via regulation) for transport?
 - Can only raise total costs – not desirable
 - National security argument on oil use?
 - Political argument to “share the pain”?
- May especially tough to get substantial emissions cuts here, absent major innovation...?

Passenger Travel GDP Elasticity ≈ 1



Consumers Want Light- Duty Size & Power



The Current US Debate

- Candidates, Congress favor cap & trade as core
Complex: allocation, cost limits, states, trade
Senate debate: D's not unified, labor/enviros
- BLW: upstream, auction share ↑ over time
\$\$ for R&D, tax relief, (bad) subsidies
CAFÉ, perhaps more “for” transport
Tough trade provision, \$\$ if states drop C&T
Retreat from (terrible) corn ethanol unlikely
- Passage around 2010? Election, Pres. Priorities