

IAEE Conference

Energy, Economy, Environment: The Global View

Climate Change Policy: Cap & Trade Vs Carbon Tax

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**San Francisco, CA
June 22, 2009**

Twin International Energy Challenges

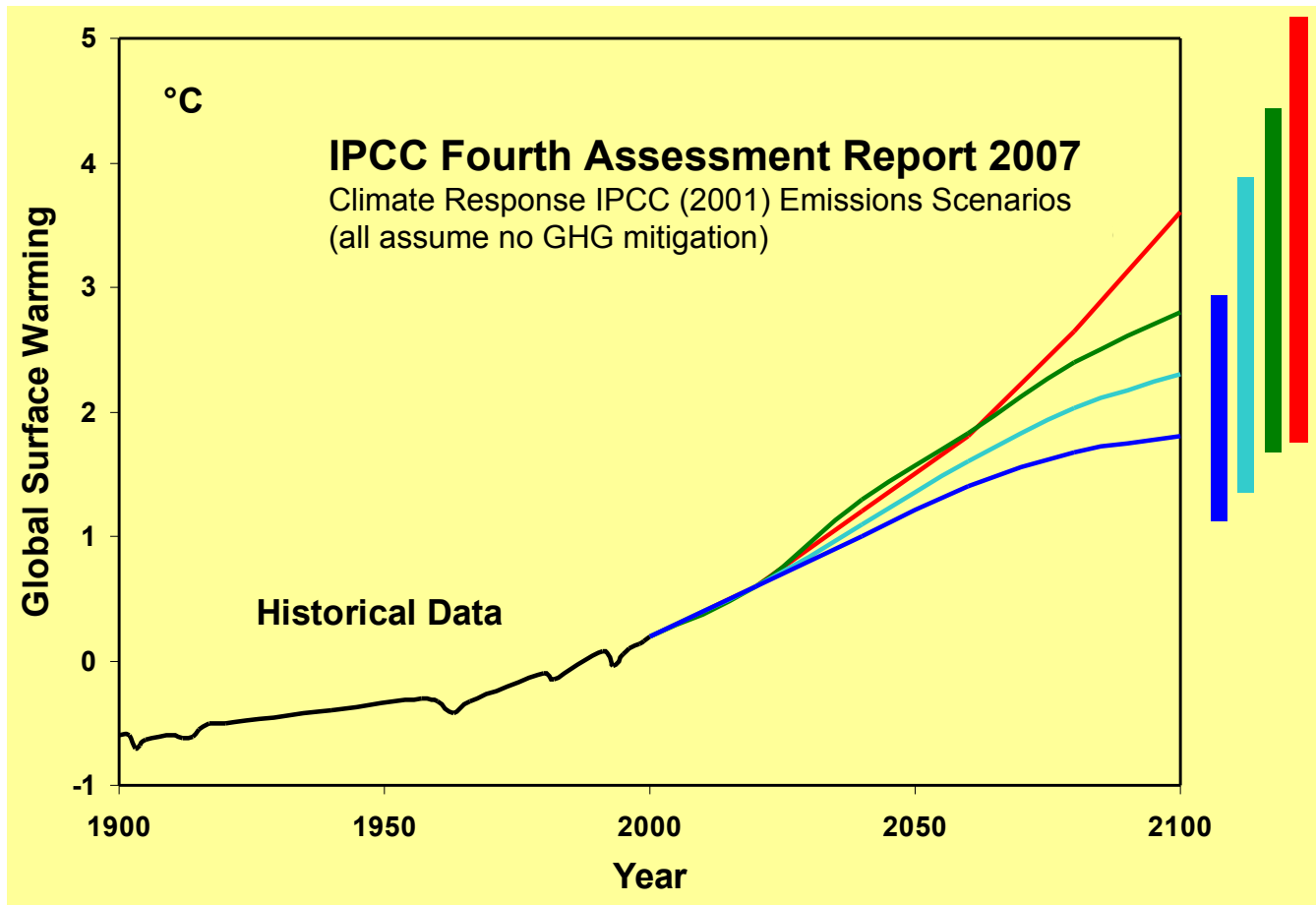
- Meeting significant increase in energy demand and improving access to energy
- Responding to GHG risks

Context (IEA):

2B People without access to commercial energy
\$22T Investment (through 2030) energy supply and distribution
\$45T Investment (through 2050) to manage climate risks

Accelerated development and deployment of advanced technology will be essential to meet aspirations and manage risks at affordable costs

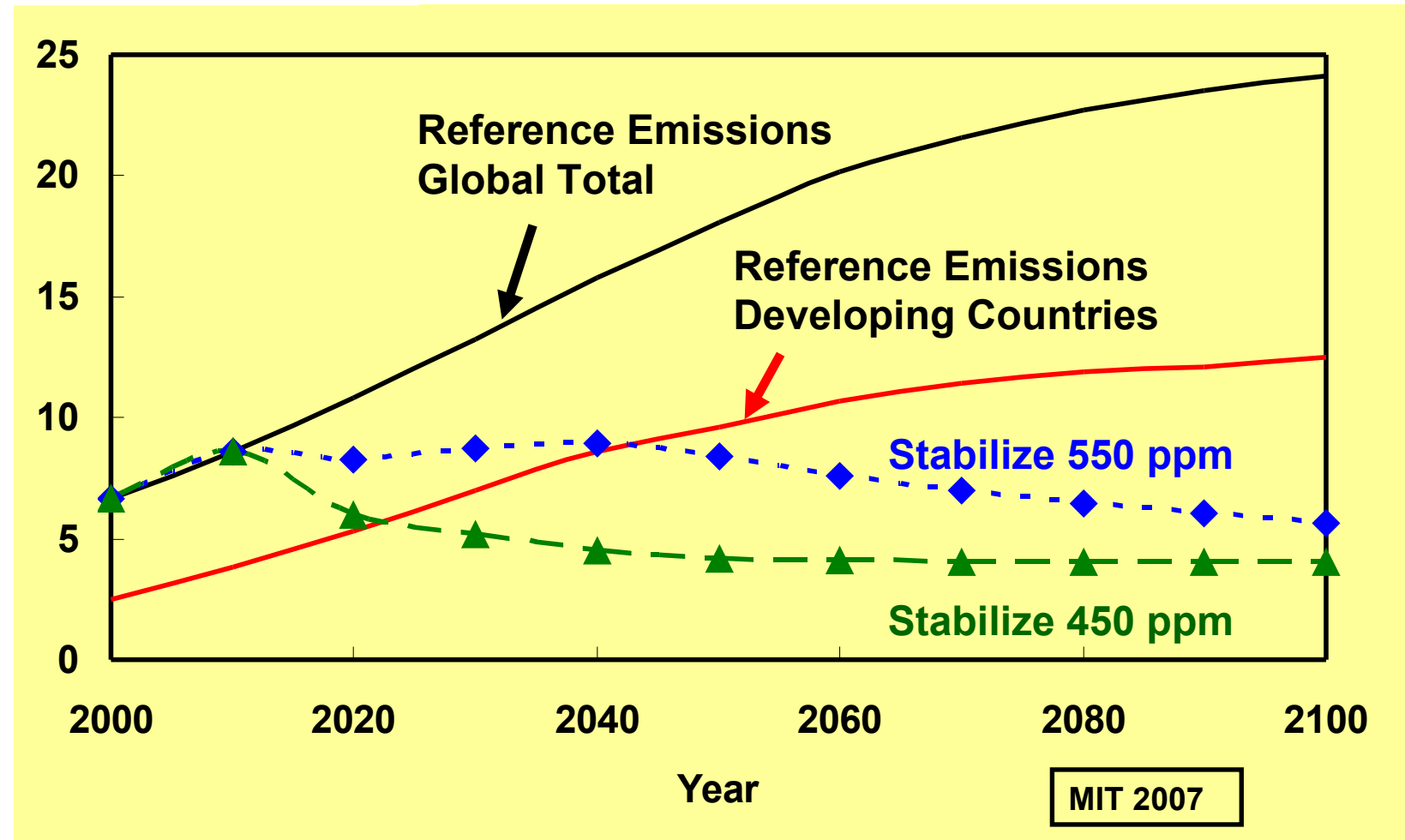
Risks of Future Climate Change



Climate policy requires a risk management framework with sequential decision making as knowledge evolves

Stabilization Requires Global Participation

Emissions (GtC/year)



Mitigation cost estimates are sensitive to assumptions about future policy in developed and developing countries

Investments to Meet G8 GHG Goal

IEA 2008: Reducing emissions 50% below 2005 by 2050 requires:

- \$45 trillion added investment in energy supply and distribution
- Commercialization of CCS, advanced biofuels, advanced transport
- Sample elements of IEA Scenario:

<u>Investment</u>	<u>Required <i>Annual</i> Additions, #</u>	<u>% of 2008 Capacity</u>
Nuclear plants 1 GW	24 – 32	7-9
Coal plants 500 MW with CCS	30 – 35	No existing

Unprecedented pace of technology deployment;
project inflation may push costs far higher

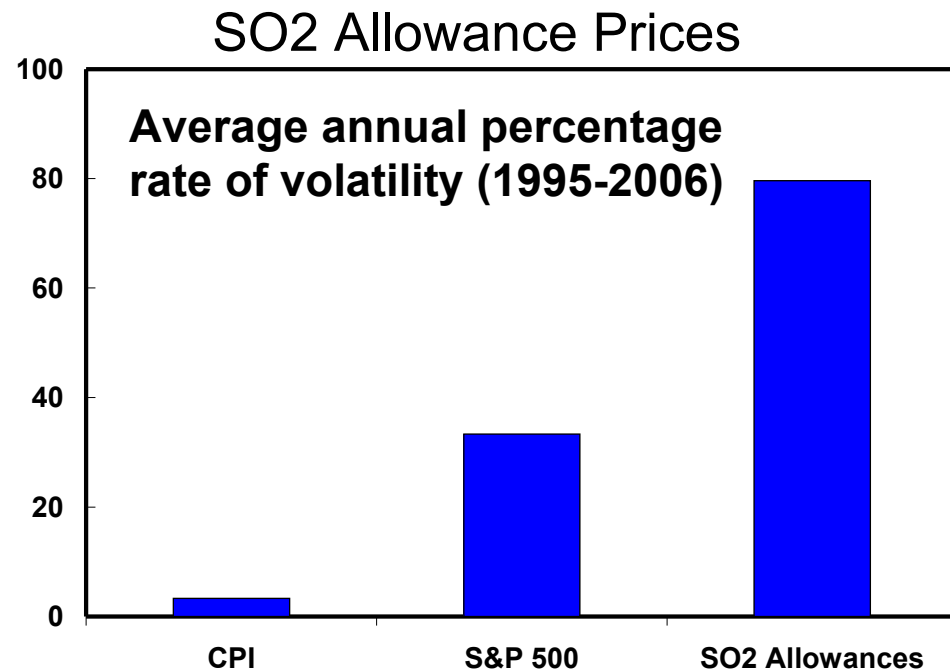
Principles for Sound Climate & Energy Policy

Approaches to address climate risks should:

- **Ensure a uniform and predictable cost of GHG emissions across the economy**
- **Let market prices drive the selection of solutions**
- **Promote global participation**
 - Recognize priorities of developing world
 - Limit consequences of differing national policies on competitiveness
- **Minimize complexity to reduce administrative costs**
- **Maximize transparency to companies and consumers**
- **Adjust in the future to developments in climate science and the economic impacts of climate policies**

Recommend a revenue neutral GHG tax as best approach to domestic policy to minimize overall costs

Price Volatility with Cap-and-Trade



Congressional Budget Office *Policy Options for Reducing CO2 Emissions* (2008)

Price volatility.....

- Undermines long-term planning and investment
- Creates economic inefficiency
- Enhances wealth transfer to trading from actions to reduce emissions

Market mechanisms use price (not trading) to drive change

Challenges to Creating a Global GHG-Carbon Market

Challenges in establishing an inclusive, comprehensive global cap and trade system with a common GHG price as the *ideal* market-based GHG policy architecture

- Agreeing on “fair” national caps through international negotiation
- National capacity to implement and enforce economy-wide caps
- Wealth transfers
- Assuring international compliance
- Linking national and regional trading schemes
- Credibility and integrity of a common carbon/GHG currency
- Transitions as system evolves

Challenges to Creating a Global GHG-Carbon Market

- Agreeing on “fair” national caps through international negotiation

Kyoto

Provides Russia and the Ukraine with 1.6 BtCO₂/yr surplus
(based on reported emissions 2006)

Bali Negotiations

Developing Countries call for Annex 1 Parties to reduce emissions 45% below 1990 levels by 2020 through domestic actions

US pledges to return emissions to 1990 levels by 2020

EU calls on developing countries to reduce emissions 15-30% below business as usual by 2020

Developing Countries reject emissions targets

Challenges to Creating a Global GHG-Carbon Market

- **National capacity to implement and enforce economy-wide caps**

Kyoto

Canada ratifies Kyoto: Emissions in 2006 +22% against a -6% target

US does not ratify Kyoto: Emissions in 2006 +14% against a -7% target

EU ratifies Kyoto, establishes cap covering ~40% of GHG emissions

Consider the ability any time soon to implement and enforce a domestic economy-wide cap in: Russia, India, China, Brazil, Indonesia, ...

Challenges to Creating a Global GHG-Carbon Market

- **Wealth transfers**

**Kyoto surplus holding of Russia and the Ukraine ~ 1.6 BtCO₂/yr
@ \$30/per tonne, implies ~50 B\$/yr in transfers**

**To meet G8 proposal to reduce global GHG emissions 50% by 2050
MIT (2008) estimates wealth transfer from Annex 1 to non-Annex 1
in 2020 over 400B\$/year
by 2050 over 3,000B\$/year**

Are such transfers politically sustainable, or will citizens call for nations to invest funds in domestic efforts ?

National Caps & Environmental Integrity

- **Environmental impacts depend on atmospheric GHG concentrations from cumulative emissions across the globe over many decades**
- **Short-term, partial, national and regional caps cannot guarantee effective management of local and national climate risks**
- **Long-term (e.g. 2050) national or regional caps face cannot be viewed realistically as legally binding; policies can be changed**
- **In an area so uncertain as climate change, it would be unwise not to insist on periodic revision of policy (cap and trade or tax) based on:**
 - Experience with enacted policies: effectiveness and unintended consequences
 - Evolving scientific understanding of climate risks
 - Technological change
 - Development of international cooperation
- **National and regional GHG policy should and will inevitably adjust as time passes**

National Caps do not guarantee environmental integrity in managing climate risks

Achieving Long-term Objectives

- **Managing long-term climate risks requires global action**
- **Success will depend on sustained, successful R&D and massive investment over many decades**
- **Cap and trade systems inevitably lead to volatile prices, that raise costs, and may threaten acceptability of system**
 - Natural variability in economic cycles, weather, energy supply systems
 - Consideration of policy change (national and international)
- **A comprehensive, economy-wide GHG tax trajectory—with domestic revenue recycling—provides a transparent market price signal to guide research, planning and investment**
- **A national GHG tax trajectory can, and should be, revised over time to achieve long-term outcomes based on experience**
- **National tax systems (with domestic revenue use) provide a less-politicized, market approach to develop and compare actions in an international framework**
- **Tax-based domestic systems can, and should, include international offsets**

Thank You