A New Strategy for International Diplomacy on Climate Change

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INTERNATIONAL LAW AND REGULATION
at the School of International Relations and Pacific Studies

Global Warming Gridlock

… a book published by Cambridg
University Press

Today

1. Some bad news from climate scientists

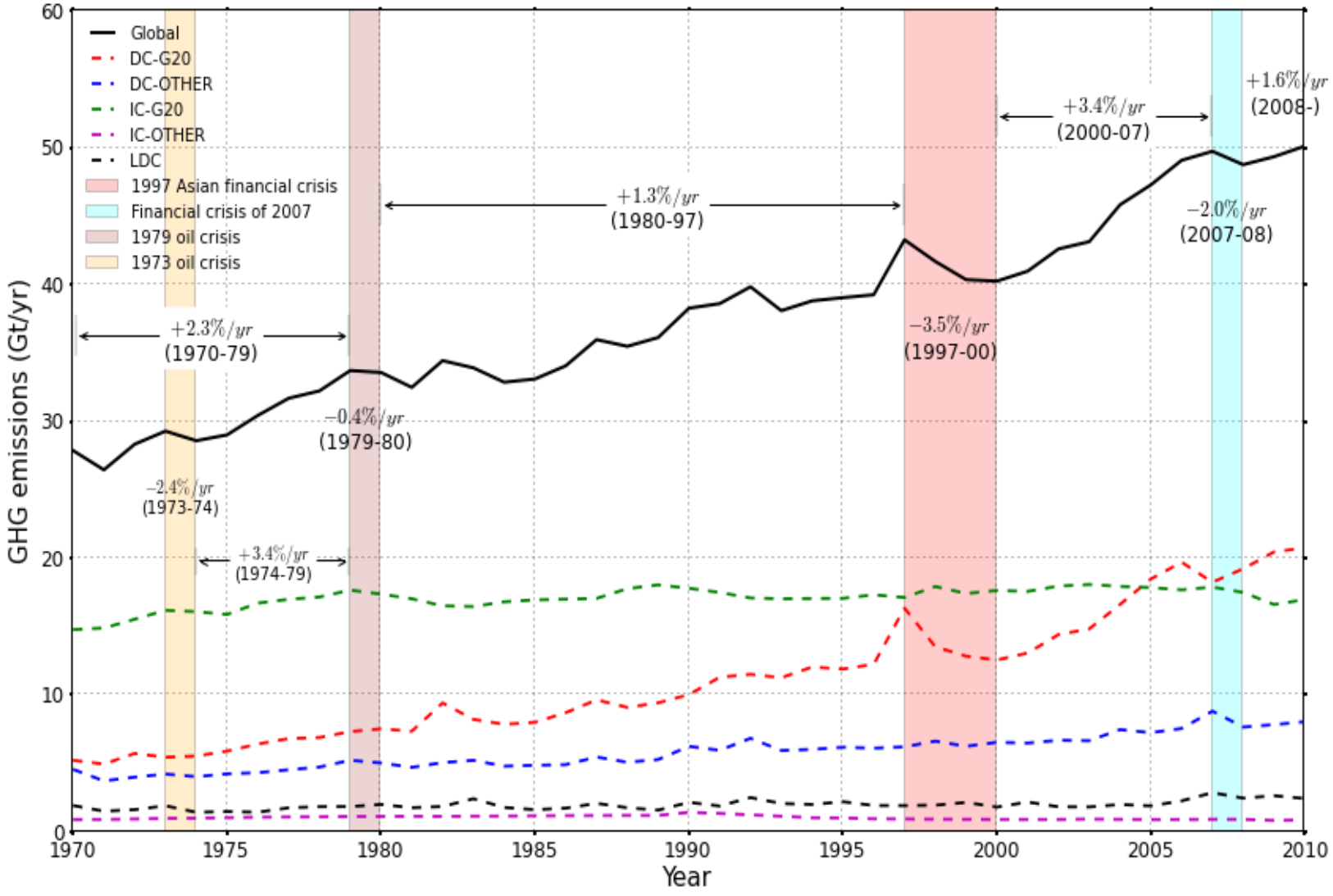
2. Some bad news from climate diplomats

1. Beyond Gridlock

2. Managing Climate Impacts

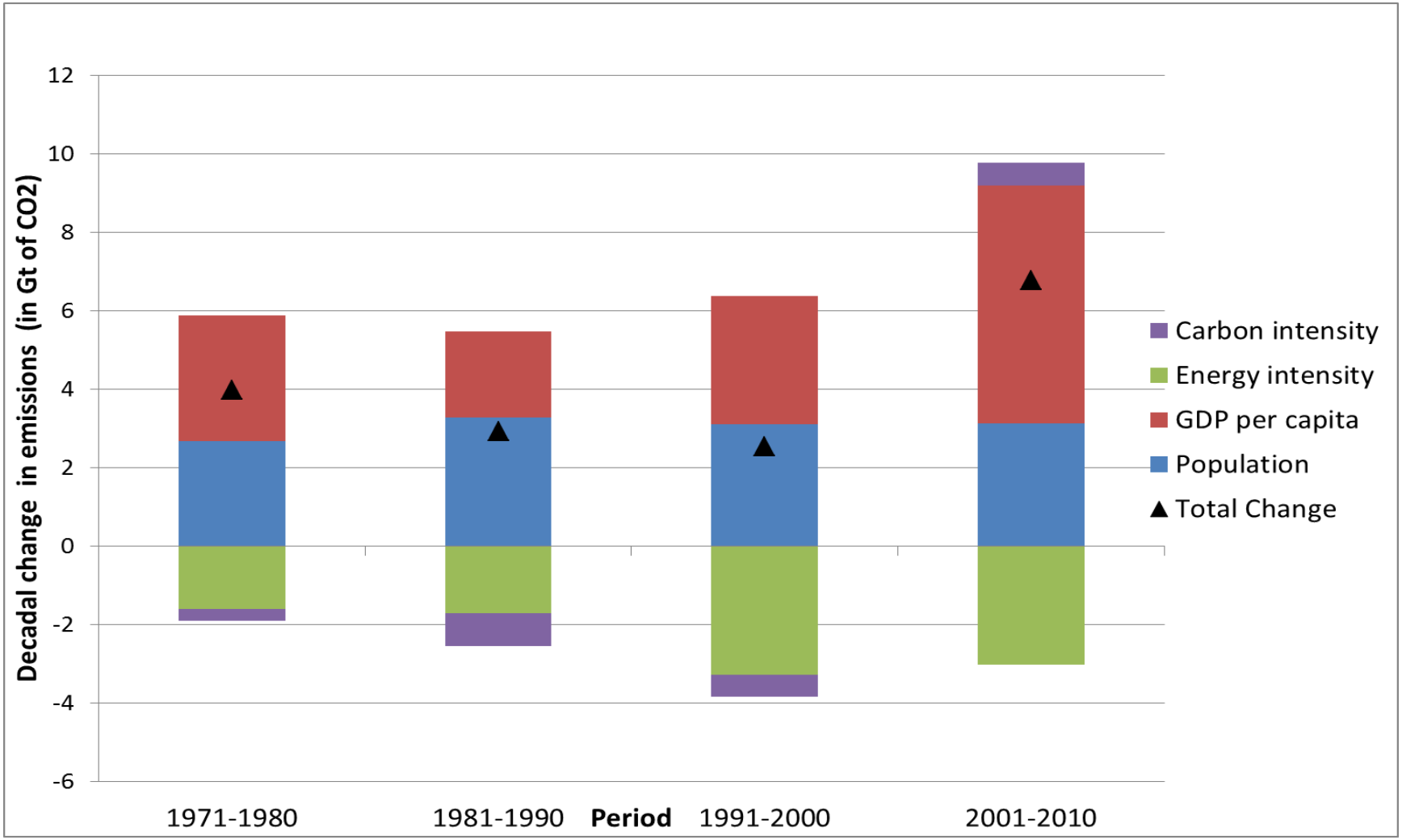
1. Some Bad News From Climate Scientists

World Emissions of GHGs, 1970-2010



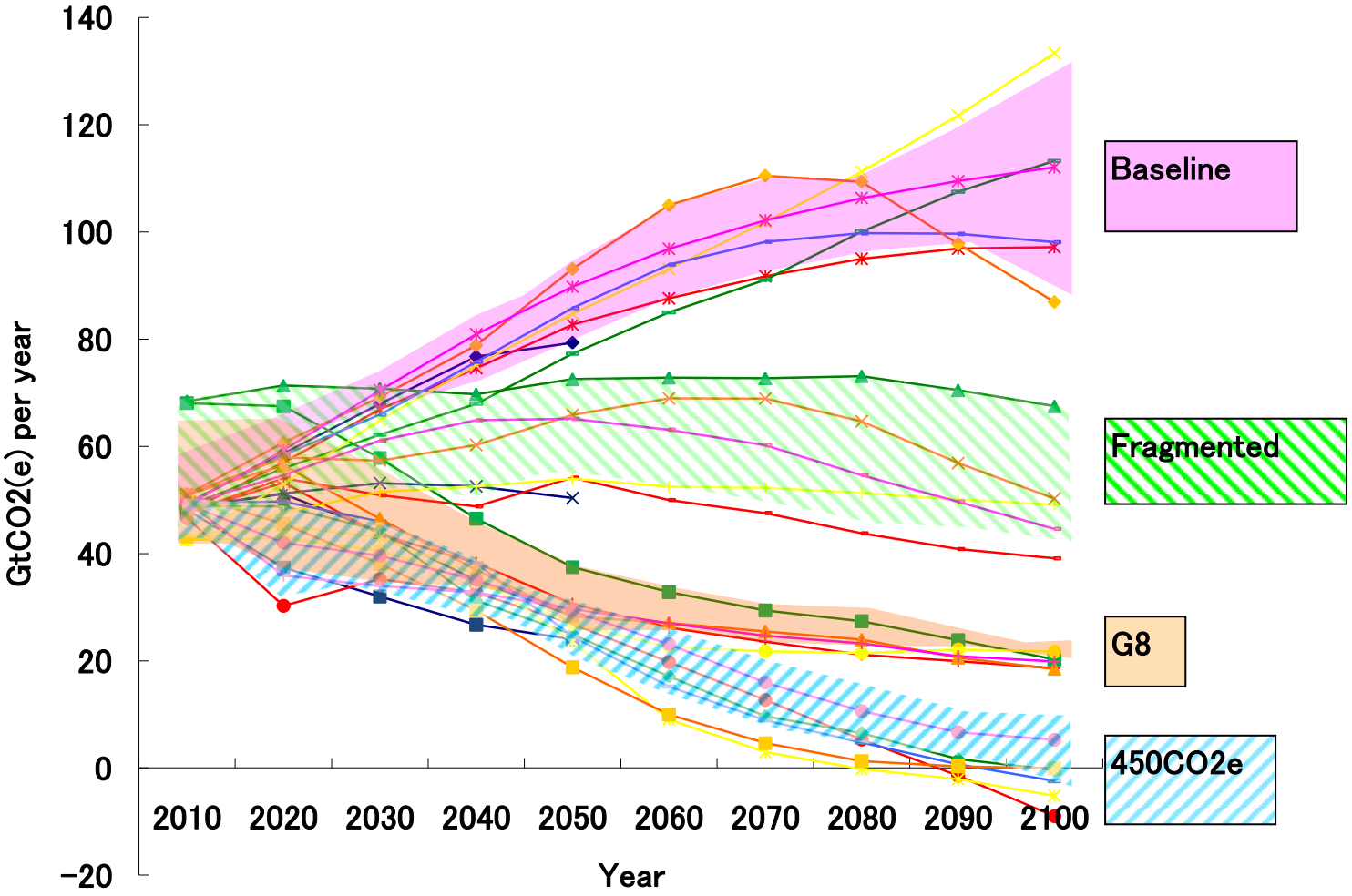
Source: EDGAR databases; all GHGs converted 100 year GWPs

Professor Kaya's Drivers of Emissions Growth



source: updated from Steckel et al using data from IEA (2012)

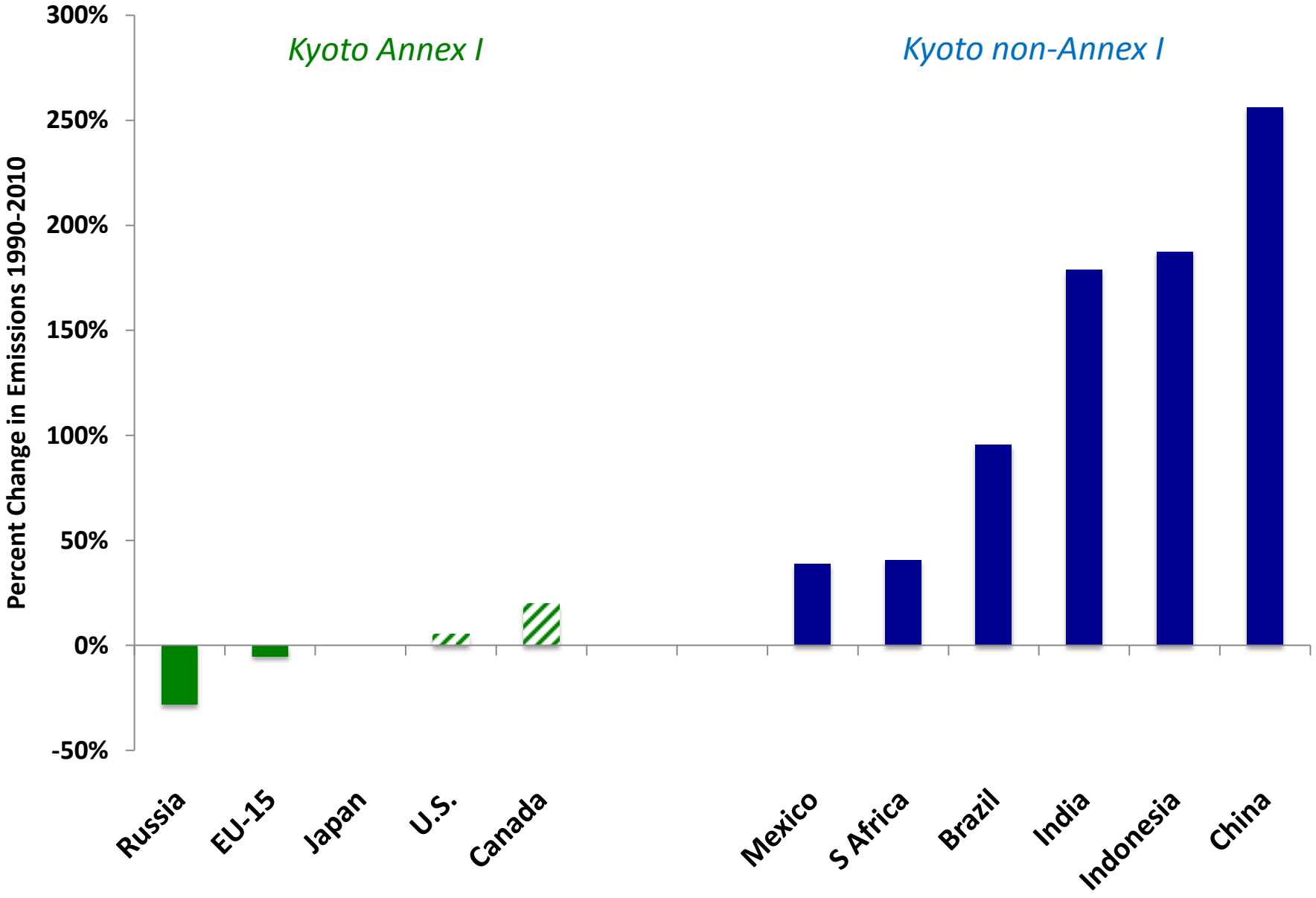
Future Emissions



26 Long term runs from 7 models that explore four different visions of the world: baseline emissions, policy that is fragmented, policy that is consistent with the public proclamations of the G8 (ie, industrialized countries cutting emissions 80% by 2050, full implementation of the Copenhagen pledges, and substantial reductions by developing countries), and optimal policies needed to stabilize emissions at 450ppm CO2(e), which is broadly consistent with warming of about 2 degrees. NOTE: based on unpublished EMF27 runs.

2. Some Bad News From Climate Diplomats

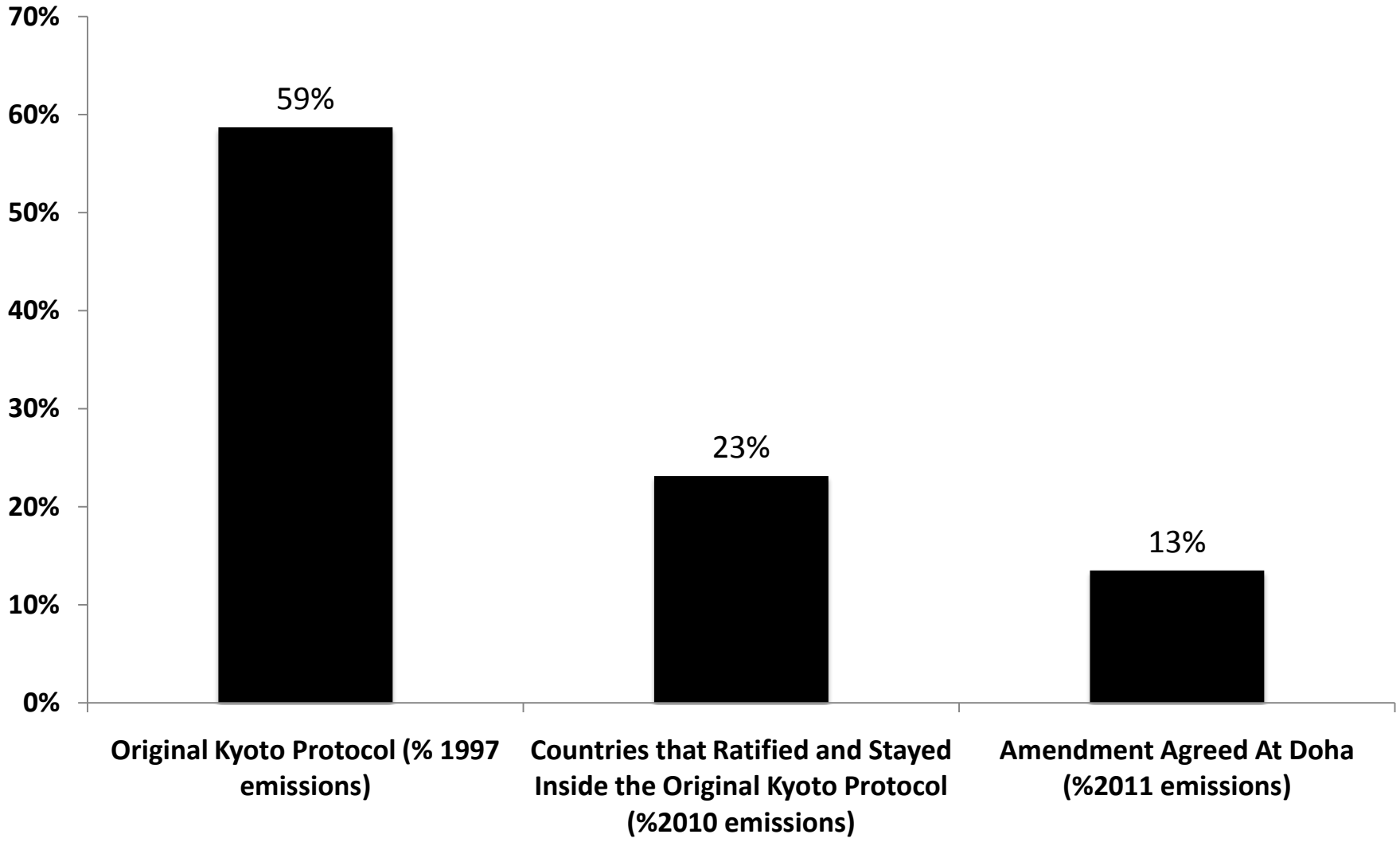
A Kyoto Perspective on Emissions, 1990 to 2010



Source: Olivier et al (2011), EDGAR Industrial CO_2

Declining Regulatory Impact of Kyoto:

Percent World Emissions Included in Annex B of Kyoto Protocol originally (1997), as ratified (2008-2012), and as Amended in Doha (2012).

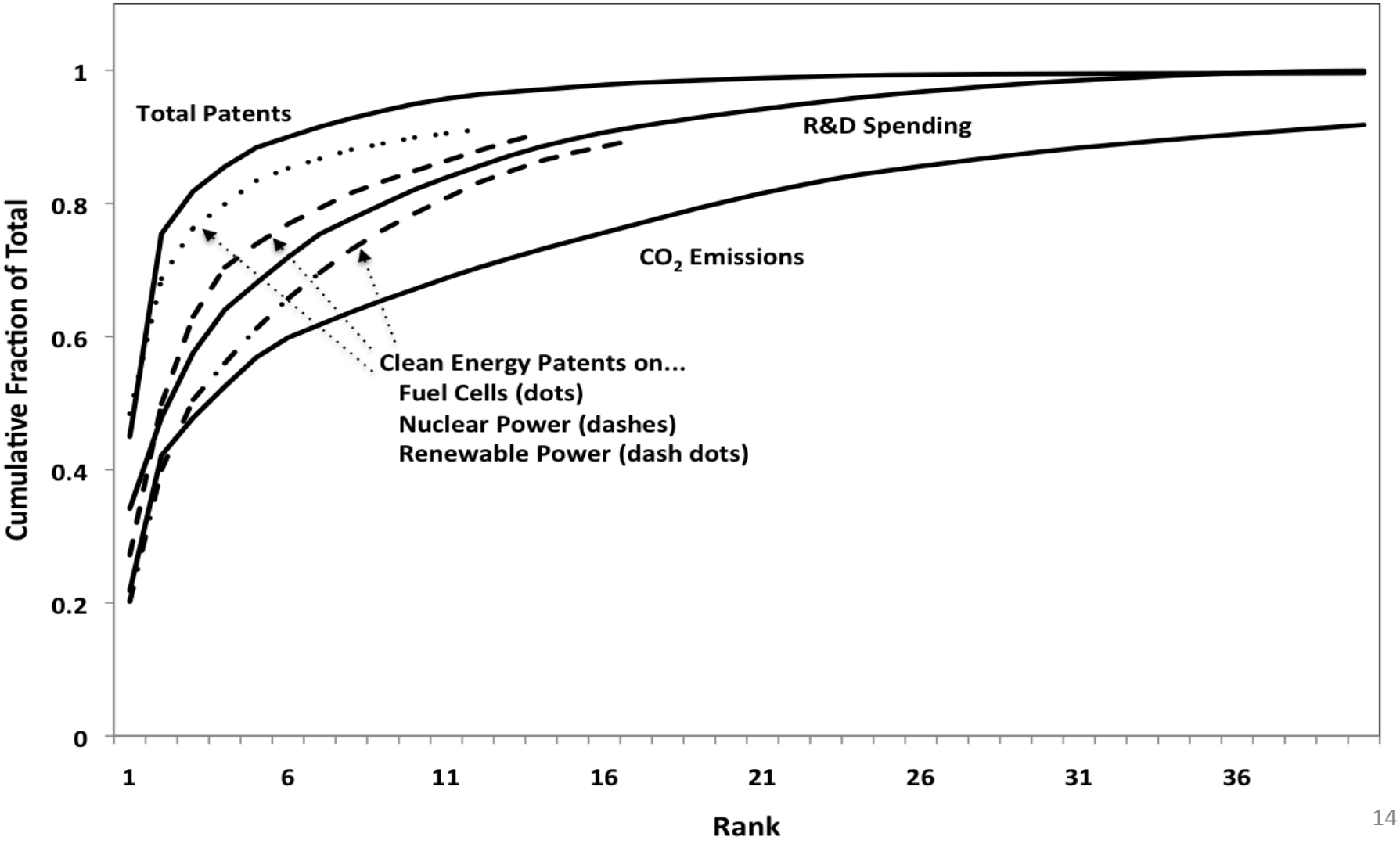


3. Beyond Gridlock

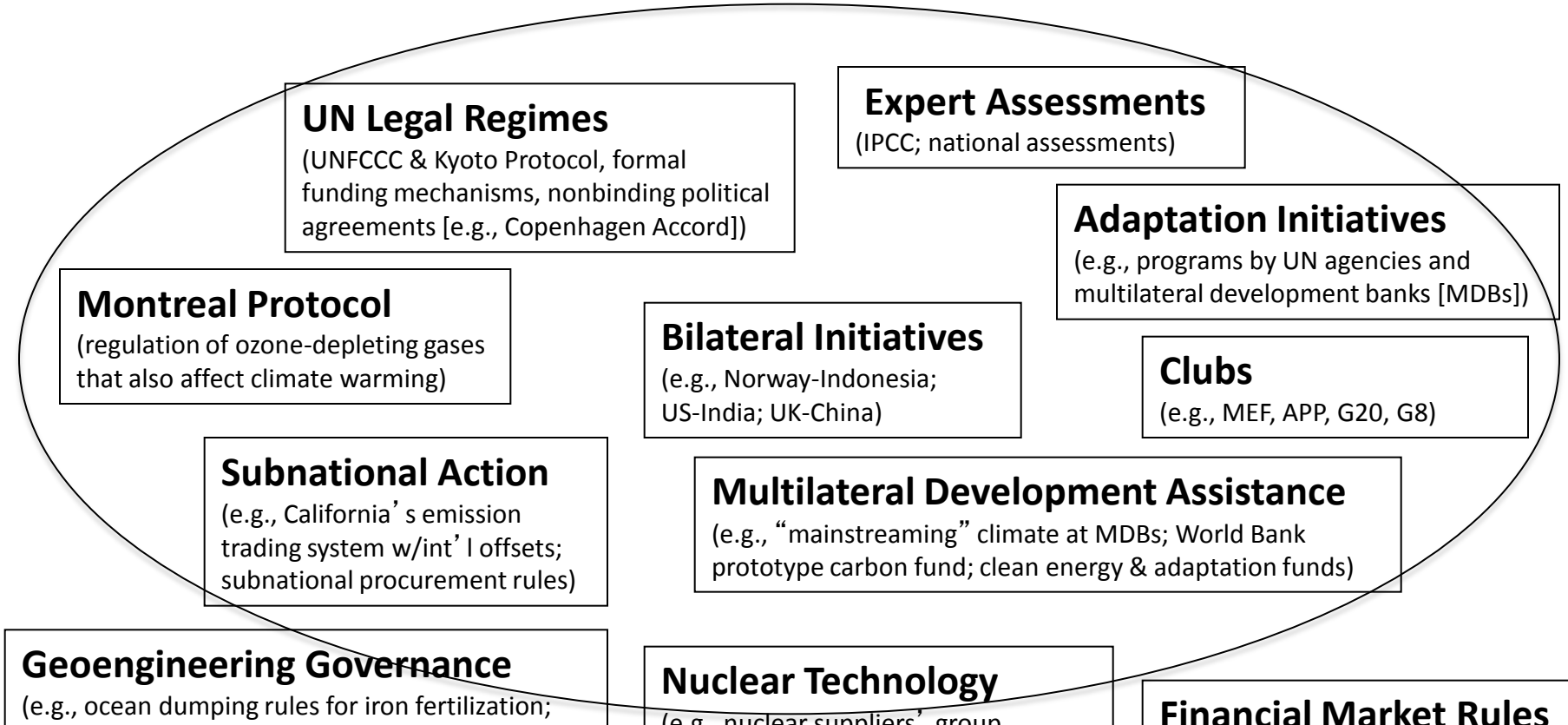
Is Climate Too Hard?

No, but breaking gridlock requires strategy…

Strategy 1: work in small groups



Strategy #2: Embrace Fragmentation



UN Legal Regimes
(UNFCCC & Kyoto Protocol, formal funding mechanisms, nonbinding political agreements [e.g., Copenhagen Accord])

Expert Assessments
(IPCC; national assessments)

Adaptation Initiatives
(e.g., programs by UN agencies and multilateral development banks [MDBs])

Montreal Protocol
(regulation of ozone-depleting gases that also affect climate warming)

Bilateral Initiatives
(e.g., Norway-Indonesia; US-India; UK-China)

Clubs
(e.g., MEF, APP, G20, G8)

Subnational Action
(e.g., California's emission trading system w/int'l offsets; subnational procurement rules)

Multilateral Development Assistance
(e.g., "mainstreaming" climate at MDBs; World Bank prototype carbon fund; clean energy & adaptation funds)

Geoengineering Governance
(e.g., ocean dumping rules for iron fertilization; possible regulation under Convention on Biological Diversity or new treaties)

Nuclear Technology
(e.g., nuclear suppliers' group provisions to accommodate US-India nuclear partnership)

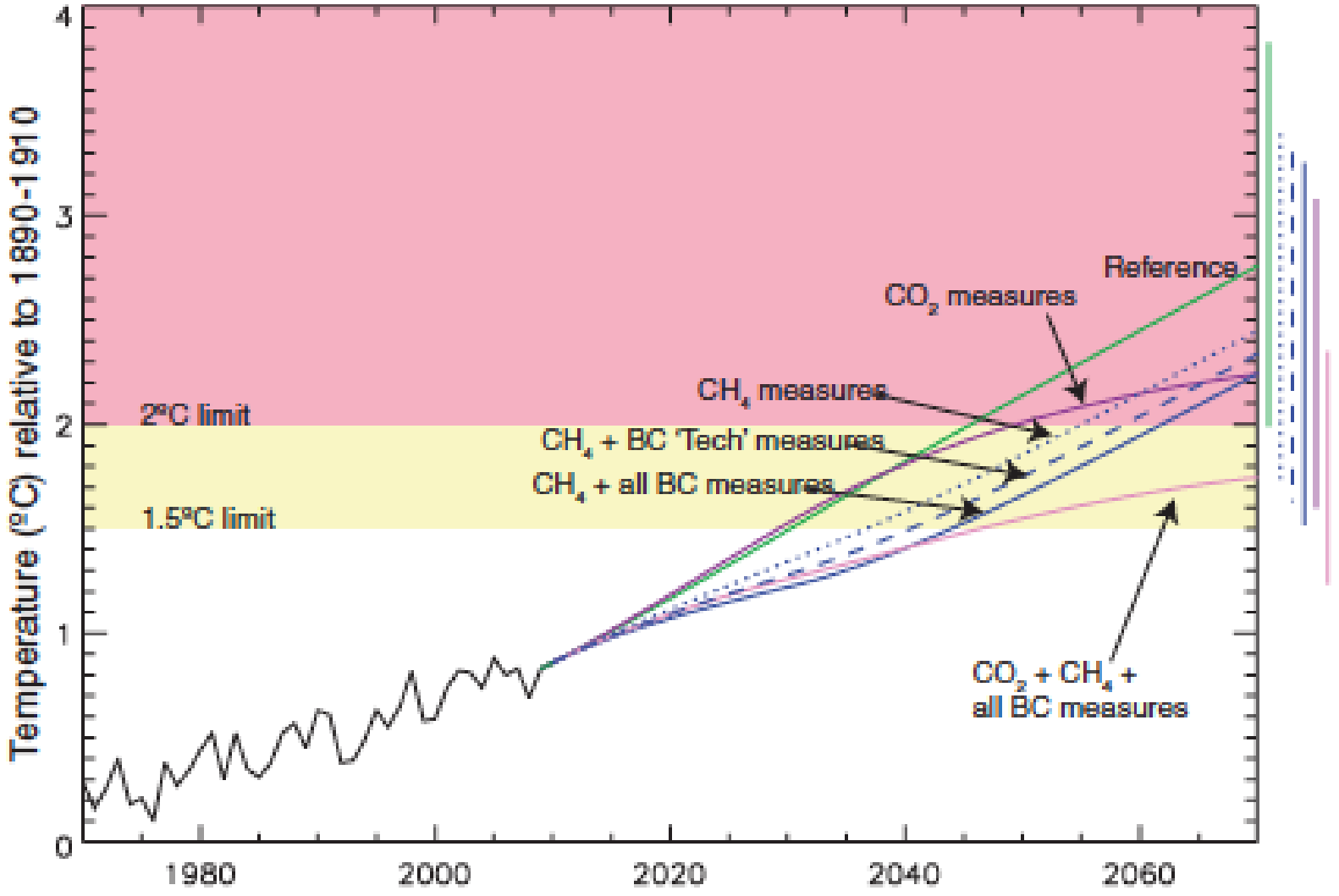
Financial Market Rules
(e.g., regulation of cross-border emission trading)

Intellectual Property and Investment Rules
(e.g., clean energy provisions in bilateral investment treaties)

International Trade Regime
(e.g., possible GATT/WTO action to accommodate border tariff adjustments)

Source: Keohane and Victor (2011)

Strategy #3: look for quick leverage



Source: Shindell et al (2012)

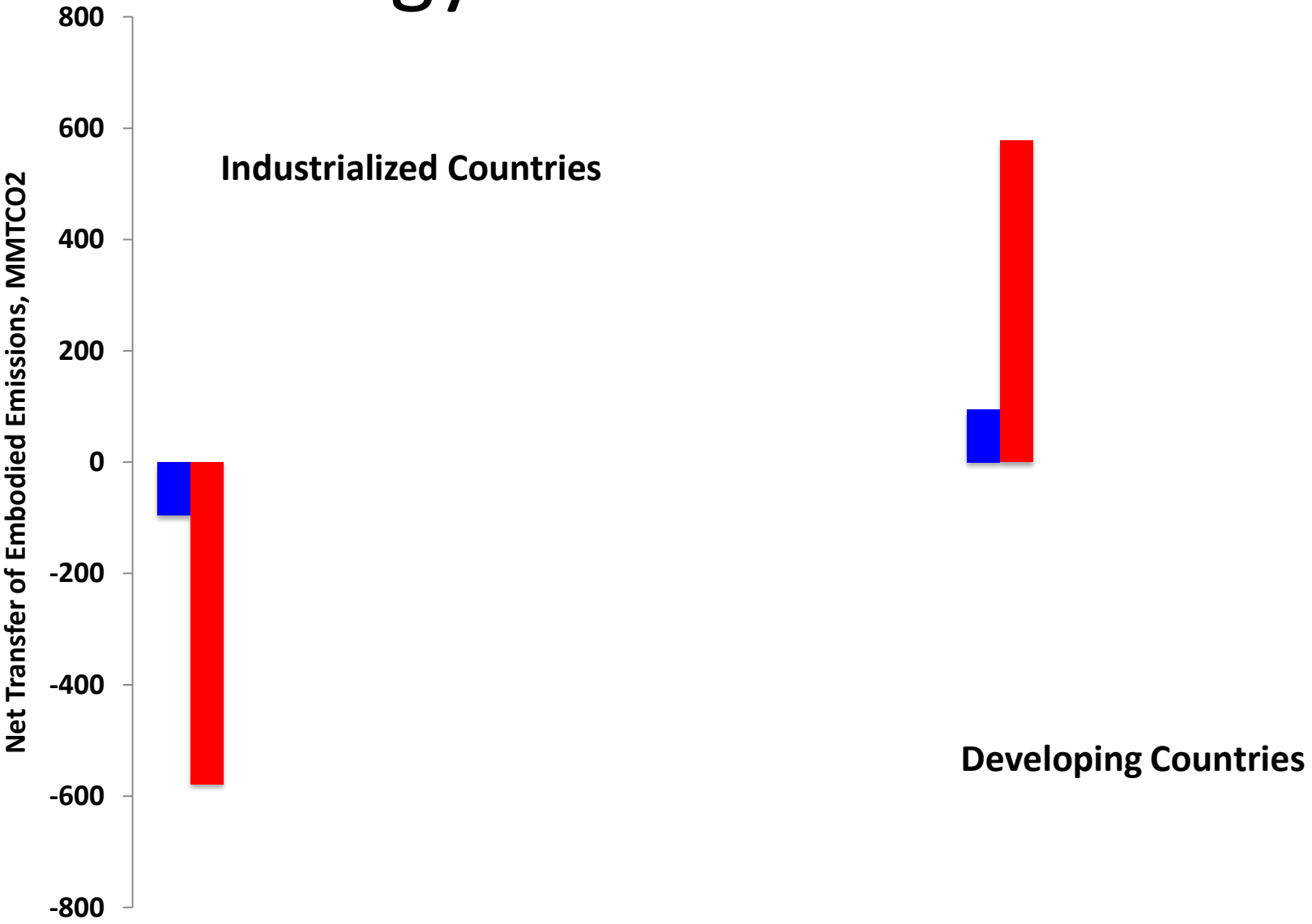
May 2012 Issue of Foreign Affairs…

The Climate Threat We Can Beat

What It Is and How to Deal With It

David G. Victor, Charles F. Kennel, and Veerabhadran Ramanathan

Strategy #4: Rewire Trade Rules



Shown: Net Transfers of CO2 embodied in goods traded, 1990 (blue bars) and 2010 (red bars), with totals for trade between Annex B (industrialized) and non-Annex B (developing) countries in solid bars

Source: based on Peters et al (2011); TSTRD data by courtesy Glen Peters

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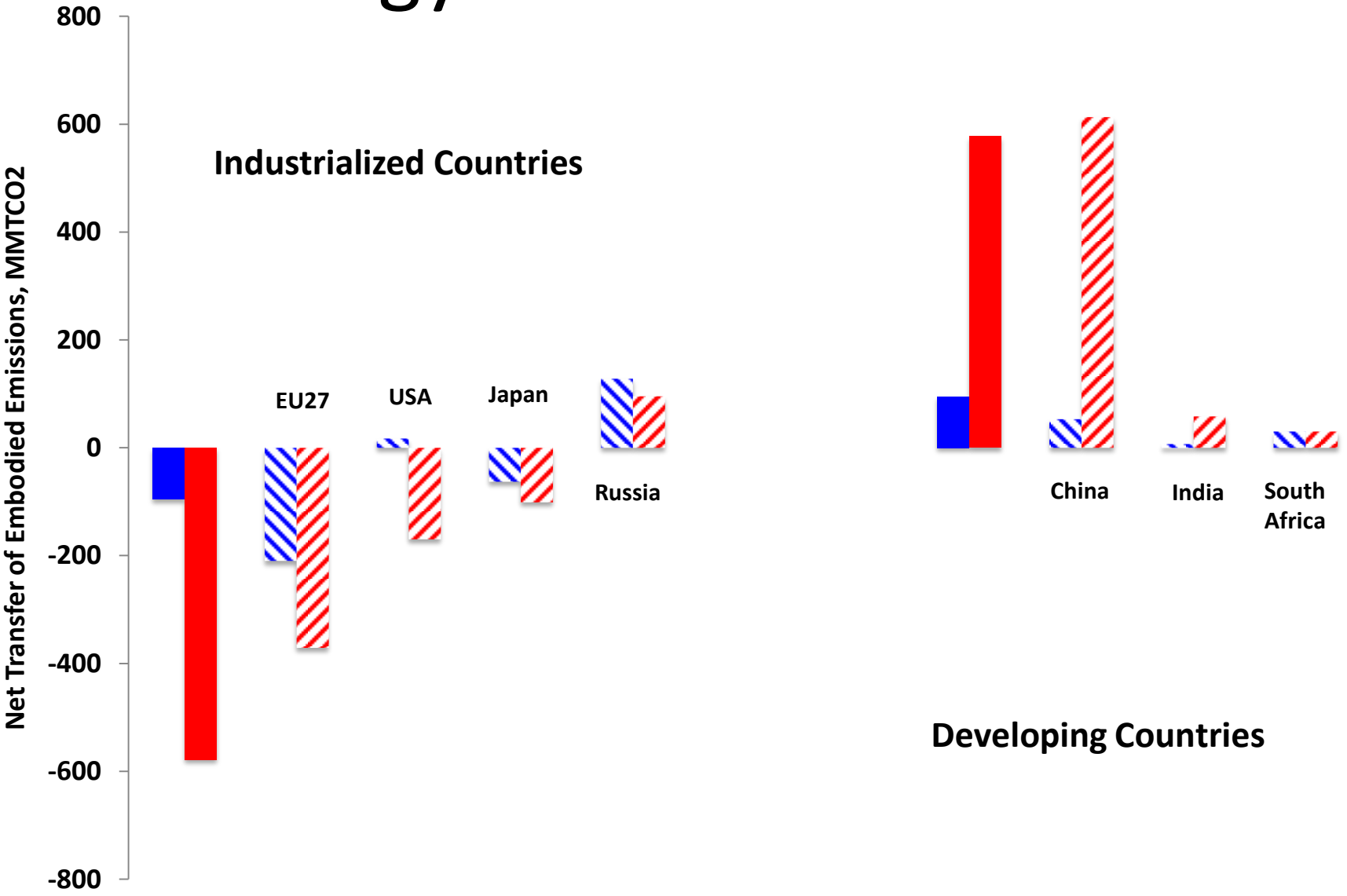

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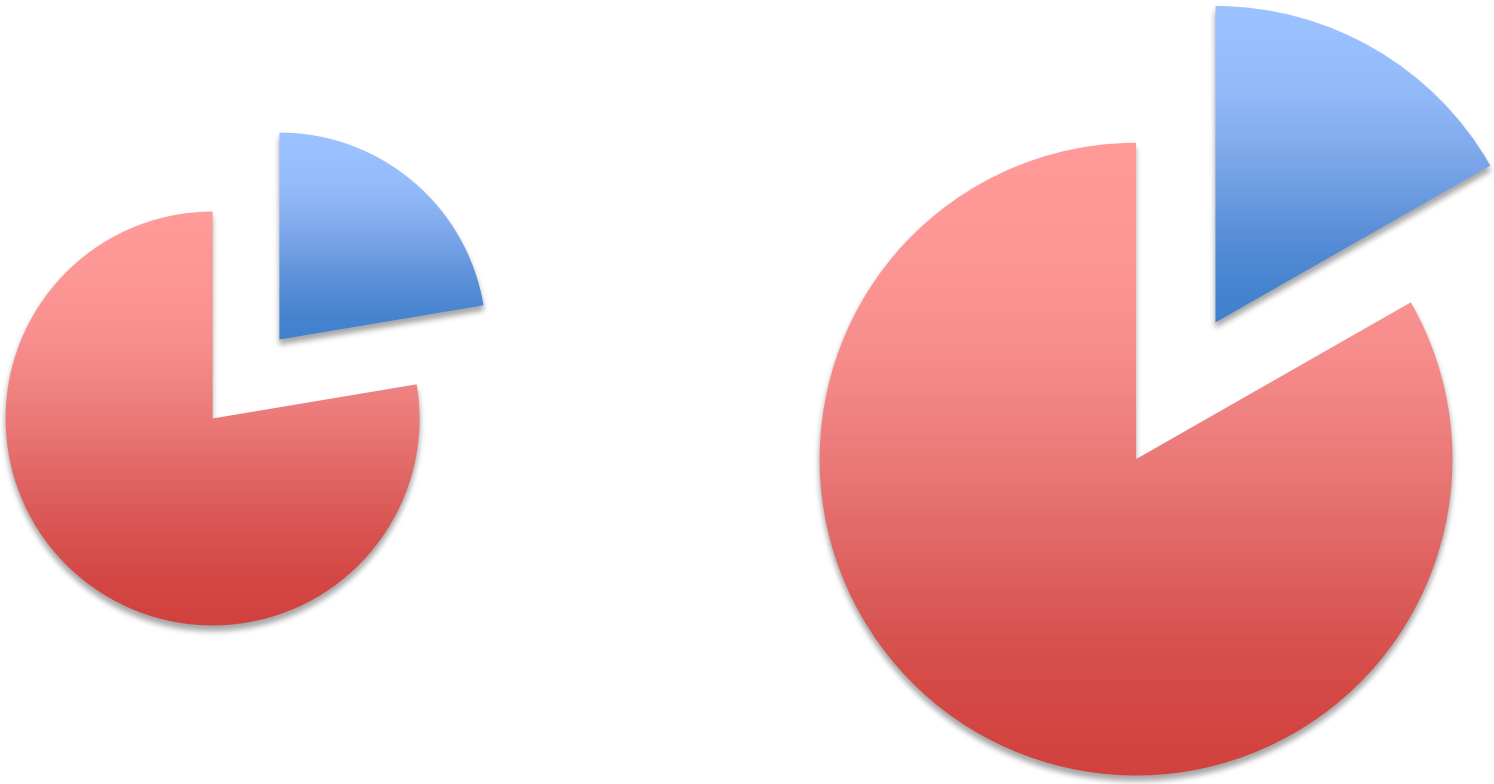
Source: based on Peters et al (2011); TSTRD data by courtesy Glen Peters

Who will lead?

Diminishing U.S. Share
1990 (left) and 2010 (right)



World total: 21.8 billion tonnes

World total: 31.5 billion tonnes

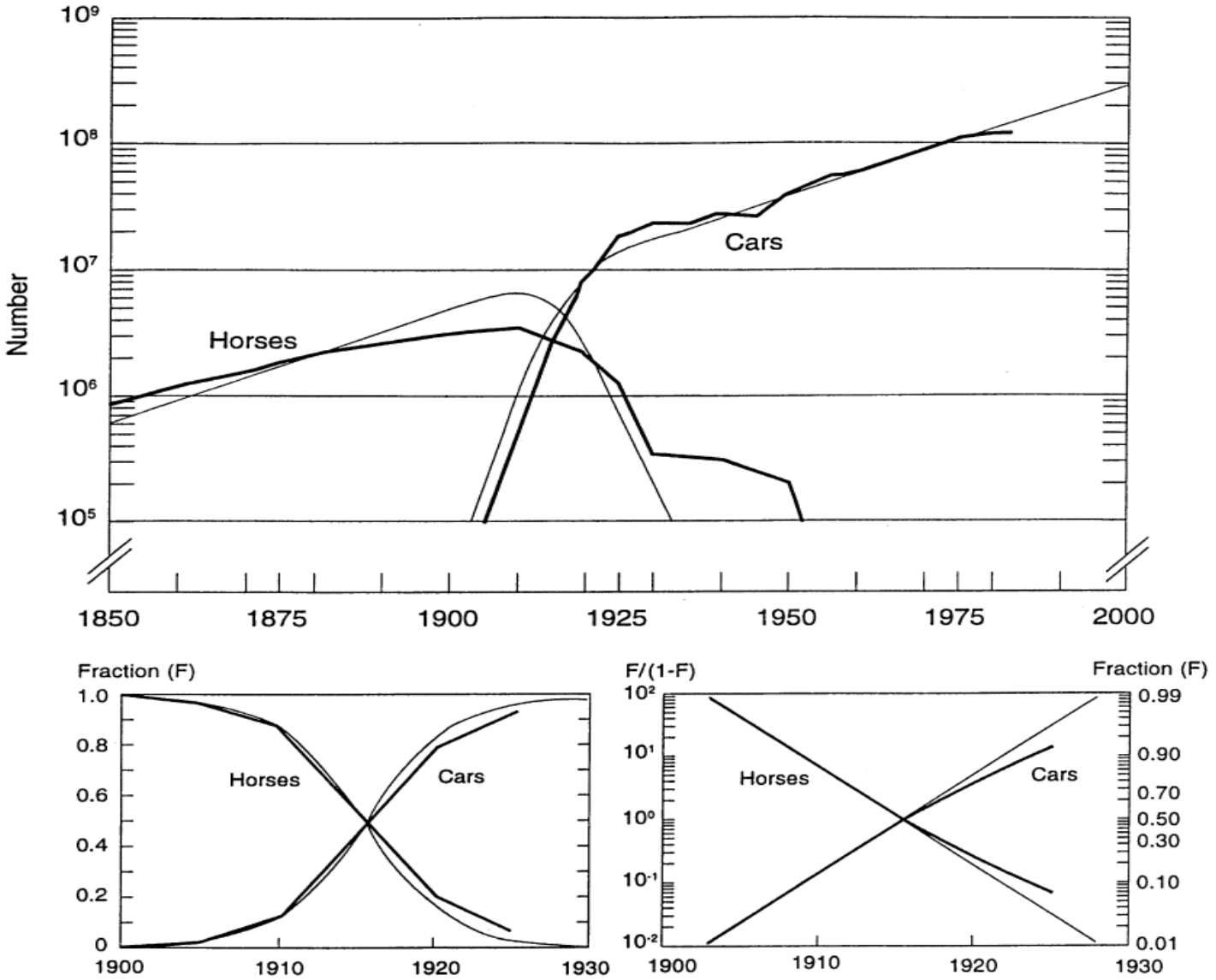
Source: ILAR analysis of CDIAC emission data (fossil fuel CO_2 only)

4. Managing Climate Impacts: Adaptation & Geoengineering

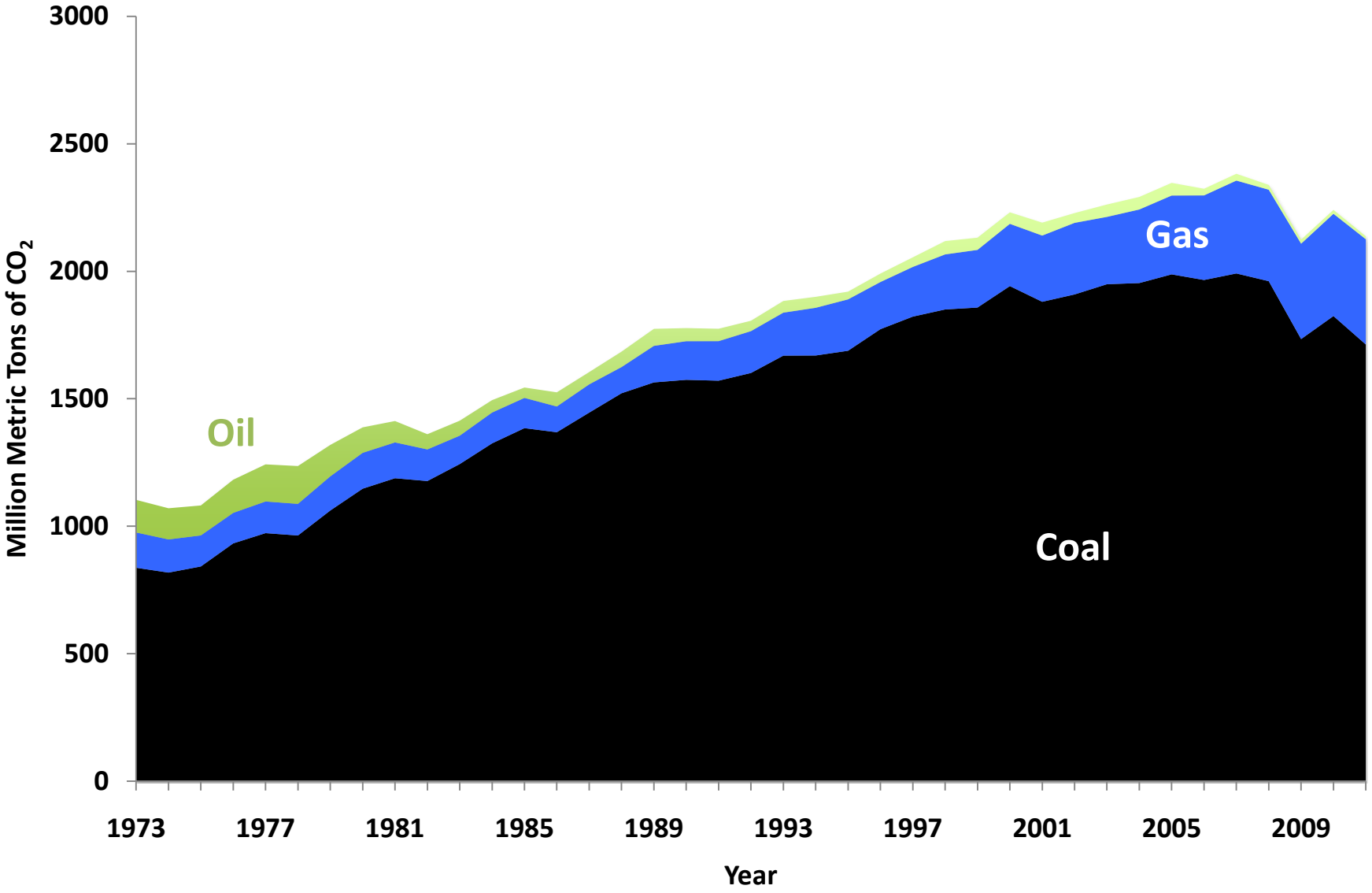
Thank You

How Long Will It Take?

Simple, Rapid Substitution: Cars for Horses



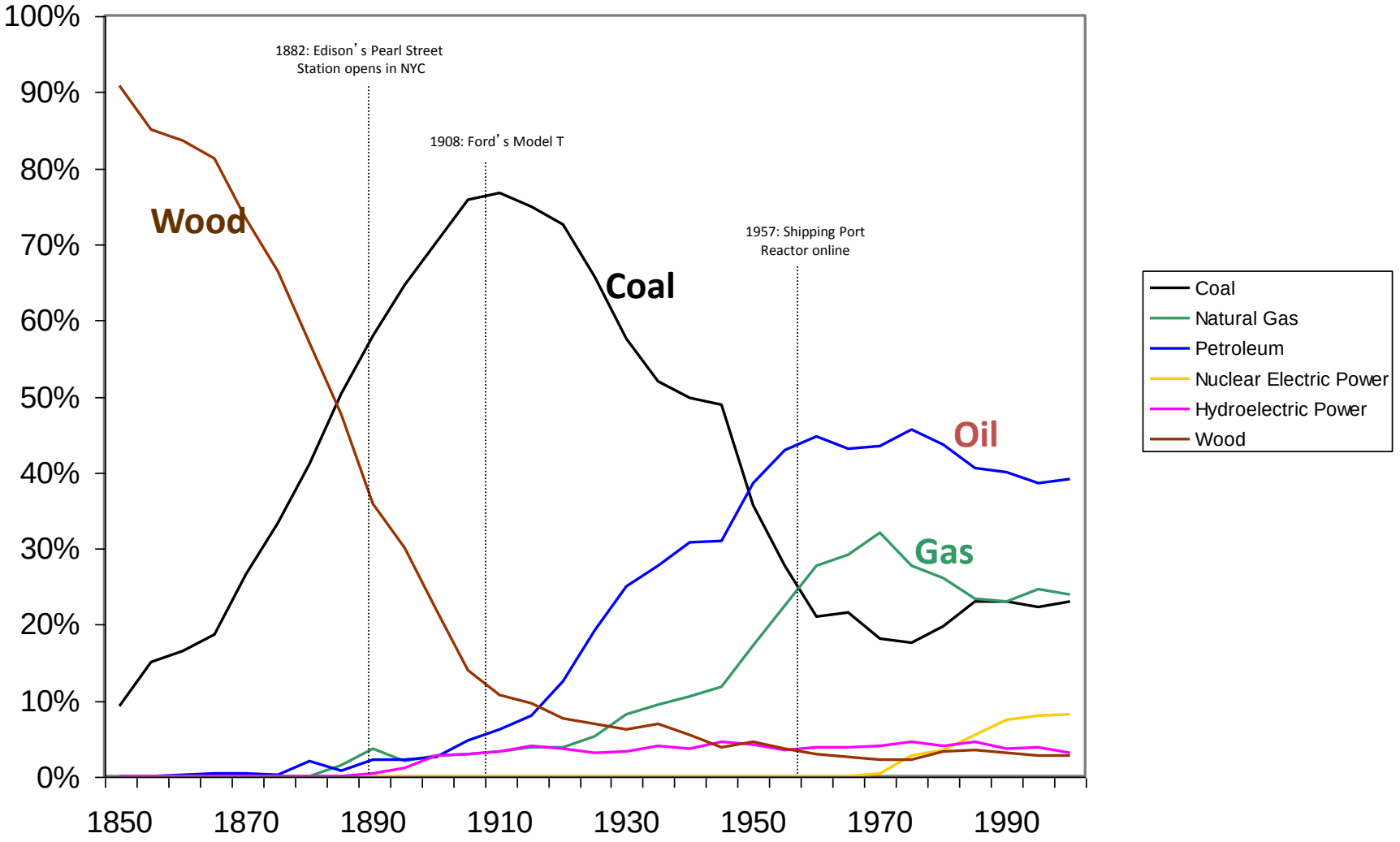
U.S. CO_2 emissions from Electricity



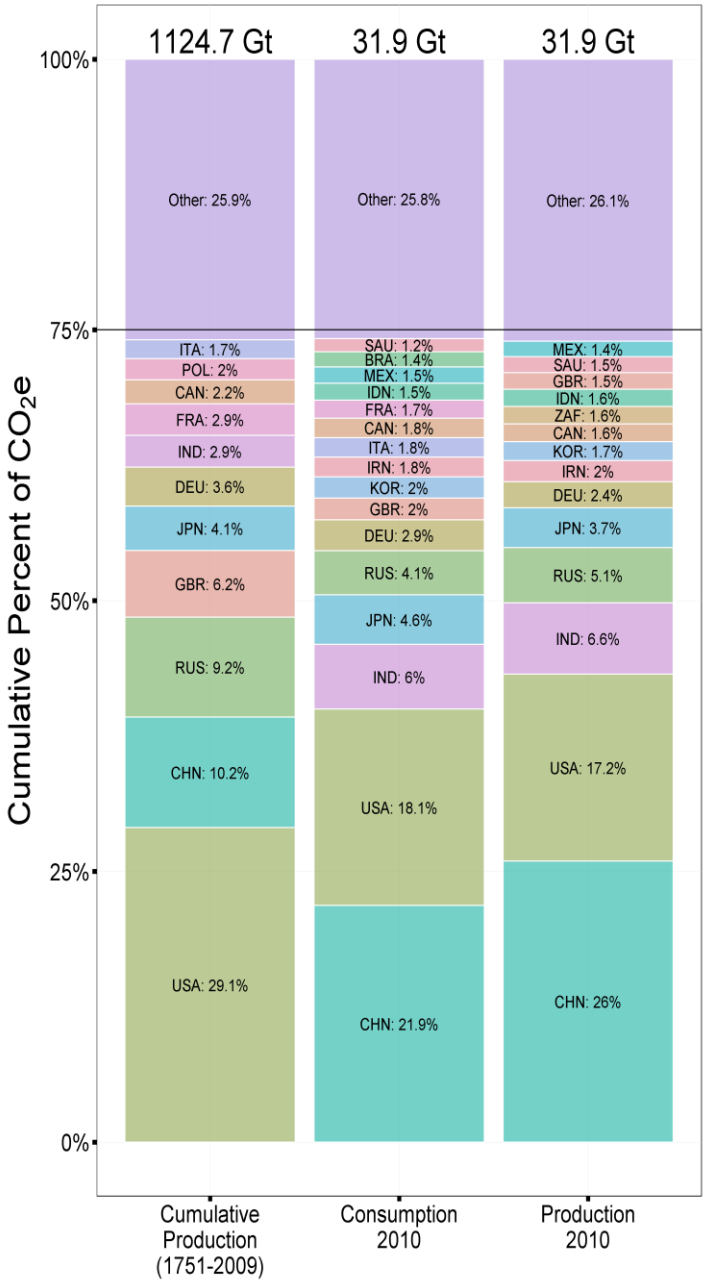
Slow Pace of Change:

Share of U.S. Energy Consumption, 1850-2000

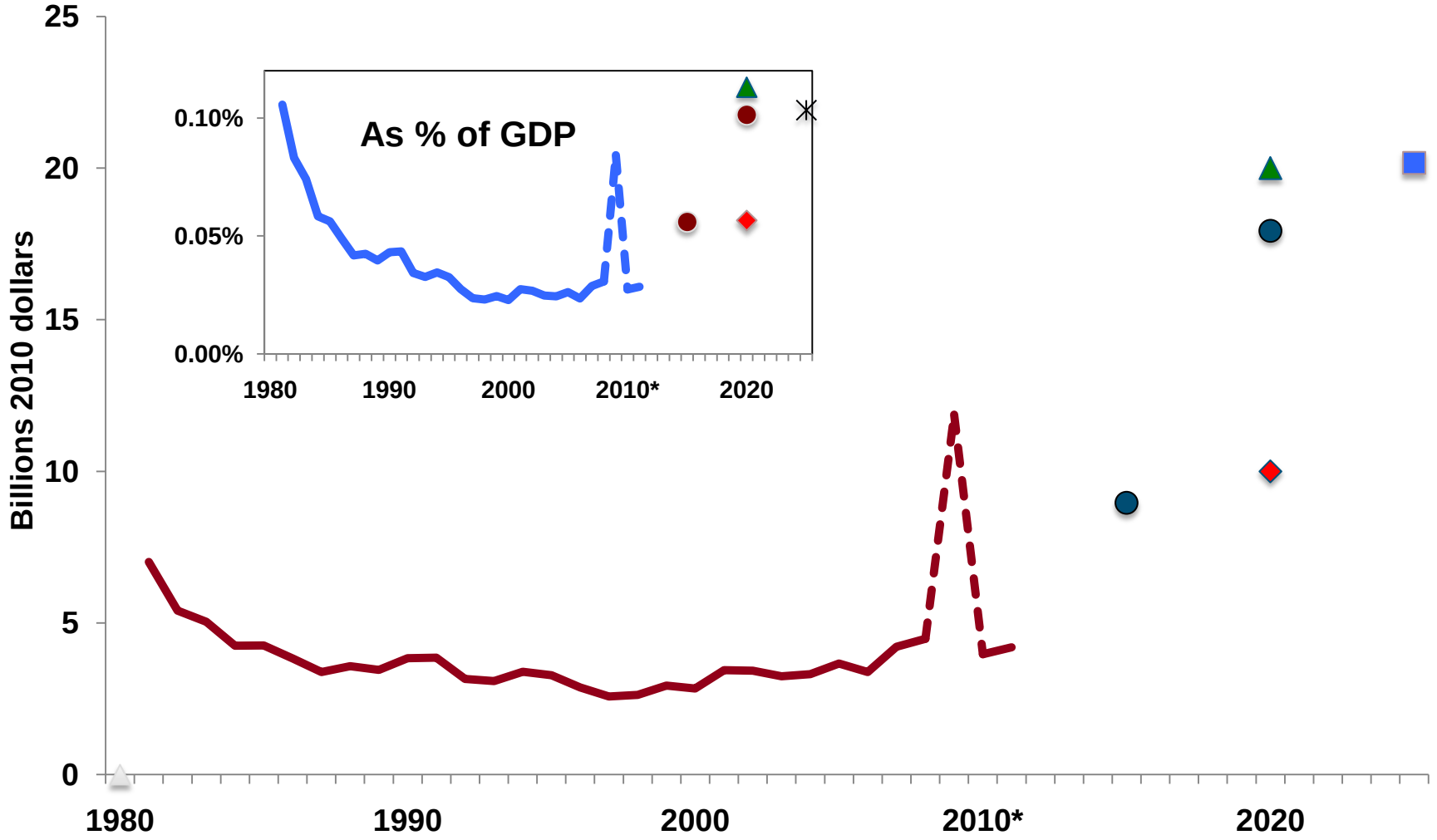
(Quadrillion Btu)



Source: Energy Information Administration/Annual Energy Review 2000


1124.7 Gt
31.9 Gt
31.9 Gt
100%
75%
50%
25%
0%
Cumulative Percent of CO_2e
Other: 25.9%
Other: 25.8%
Other: 26.1%
ITA: 1.7%
POL: 2%
CAN: 2.2%
FRA: 2.9%
IND: 2.9%
DEU: 3.6%
JPN: 4.1%
GBR: 6.2%
RUS: 9.2%
CHN: 10.2%
USA: 29.1%
SAU: 1.2%
BRA: 1.4%
MEX: 1.5%
IDN: 1.5%
FRA: 1.7%
CAN: 1.8%
ITA: 1.8%
IRN: 1.8%
KOR: 2%
GBR: 2%
DEU: 2.9%
RUS: 4.1%
JPN: 4.6%
IND: 6%
USA: 18.1%
CHN: 21.9%
MEX: 1.4%
SAU: 1.5%
GBR: 1.5%
IDN: 1.6%
ZAF: 1.6%
CAN: 1.6%
KOR: 1.7%
IRN: 2%
DEU: 2.4%
JPN: 3.7%
RUS: 5.1%
IND: 6.6%
USA: 17.2%
CHN: 26%
Cumulative Production (1751-2009)
Consumption 2010
Production 2010

U.S. Federal Energy RD&D Spending: 1980 to 2010, Major Proposals to 2025

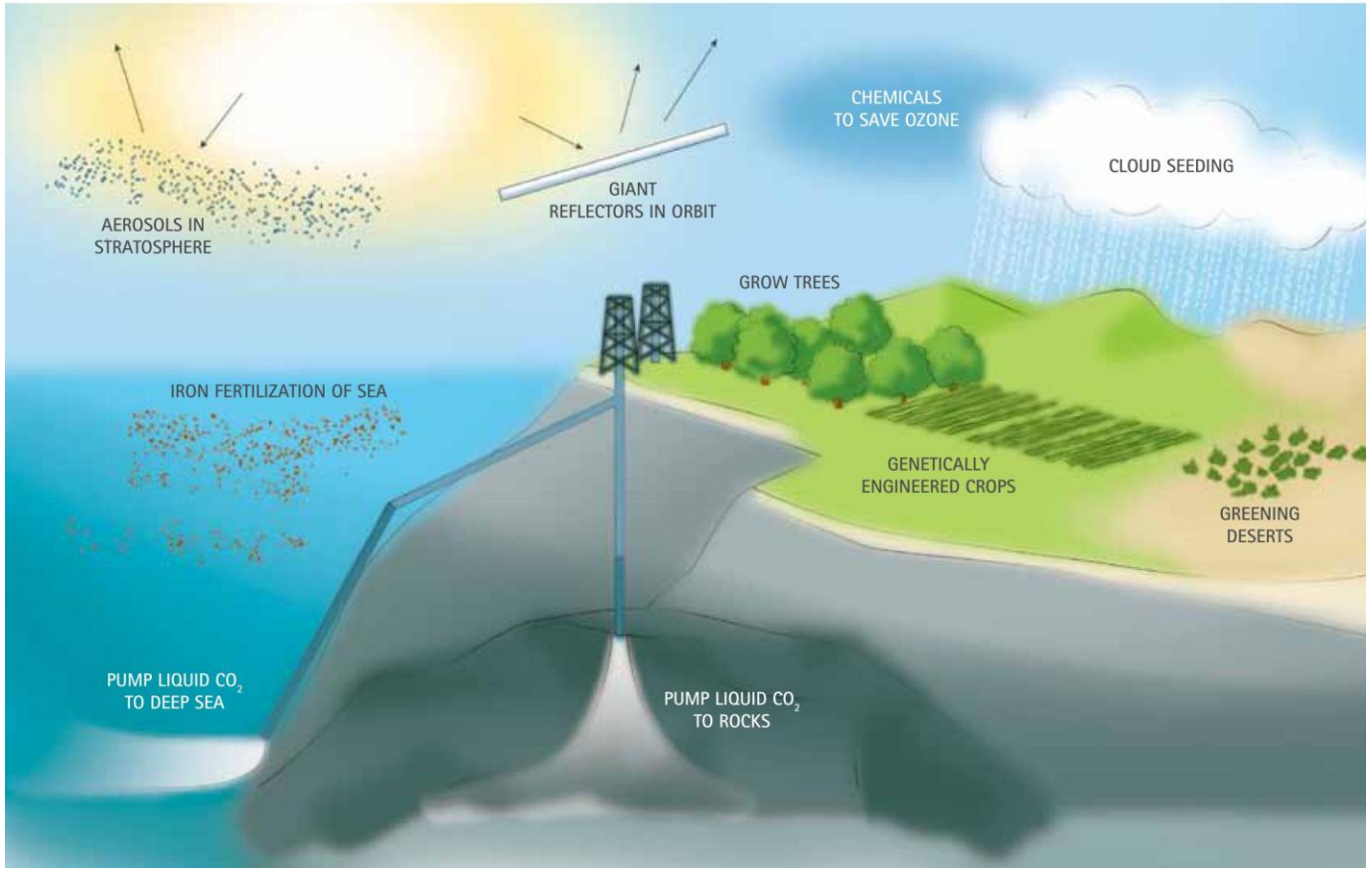


Sources: IEA; BEA; DOE Budget (2009-2011 estimates); ILAR/UCSD analysis

RD&D Proposals: Climate Group (red circles), Gates/Immelt (yellow diamond), Obama 2010 budget vision (green triangle), IEA (blue square)

FIGURE 4: CLIMATE REMEDIATION (GENERAL)[6]

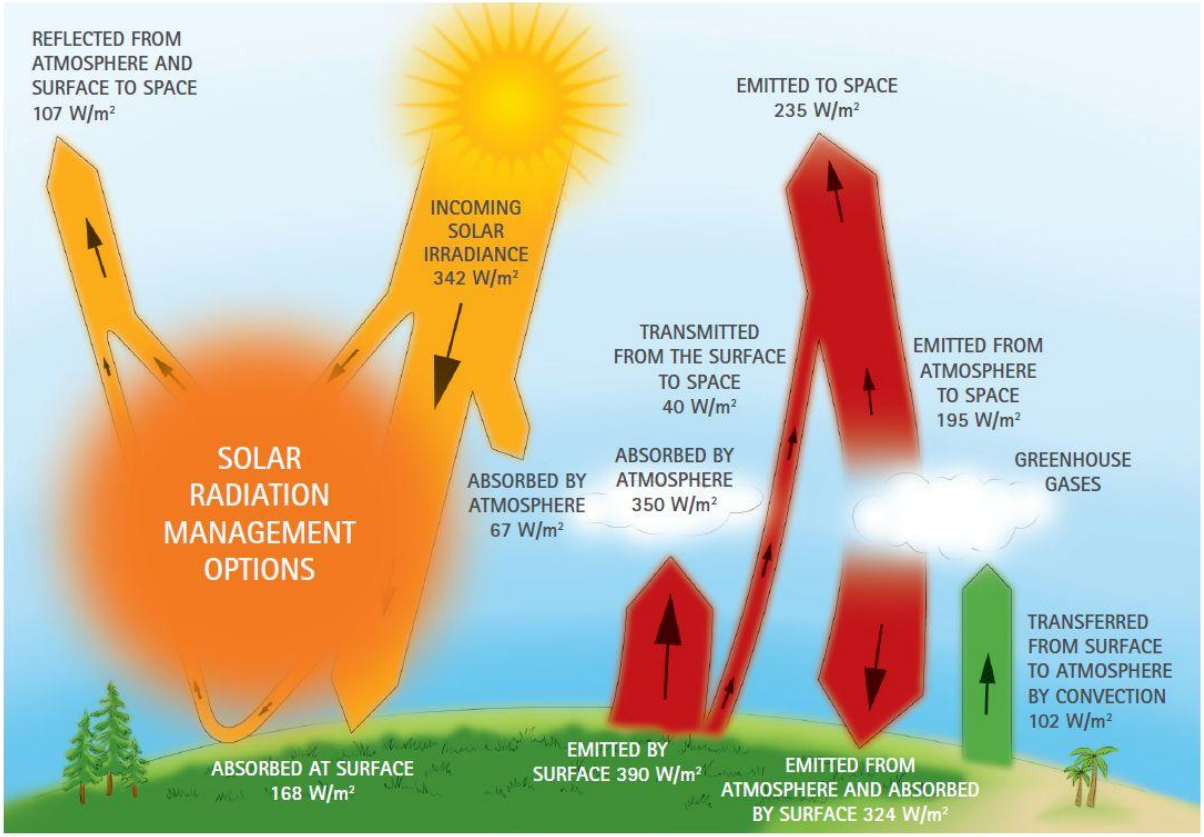
Schematic representation of various climate remediation proposals



D. W. Keith (2001). Geoengineering. Nature, 409: 420.

FIGURE 5: SOLAR RADIATION MANAGEMENT (SRM)

Stratospheric Aerosol Injection[22]

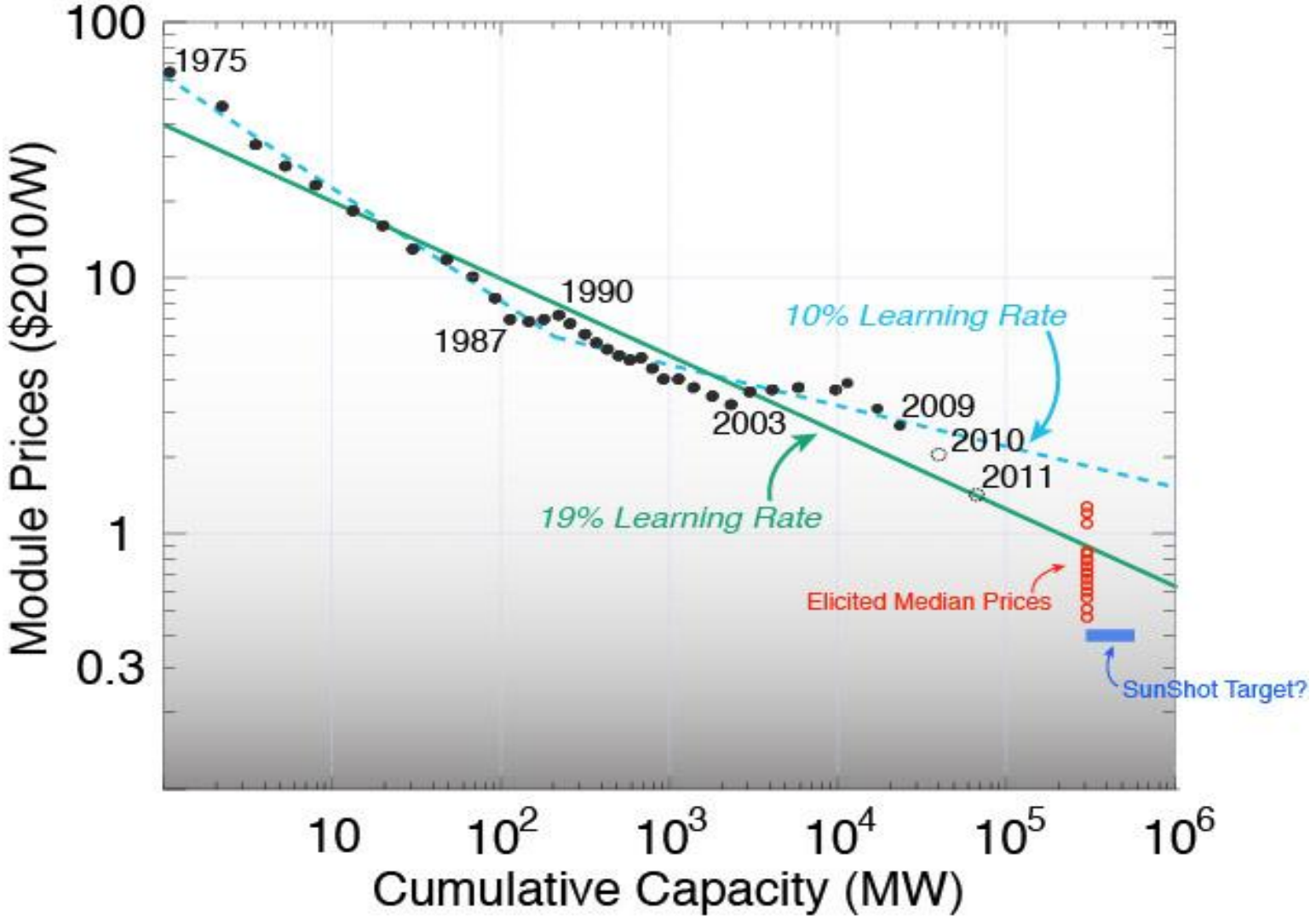


Modified from Kiehl and Trenberth (1997).

Strategies for Overcoming Gridlock

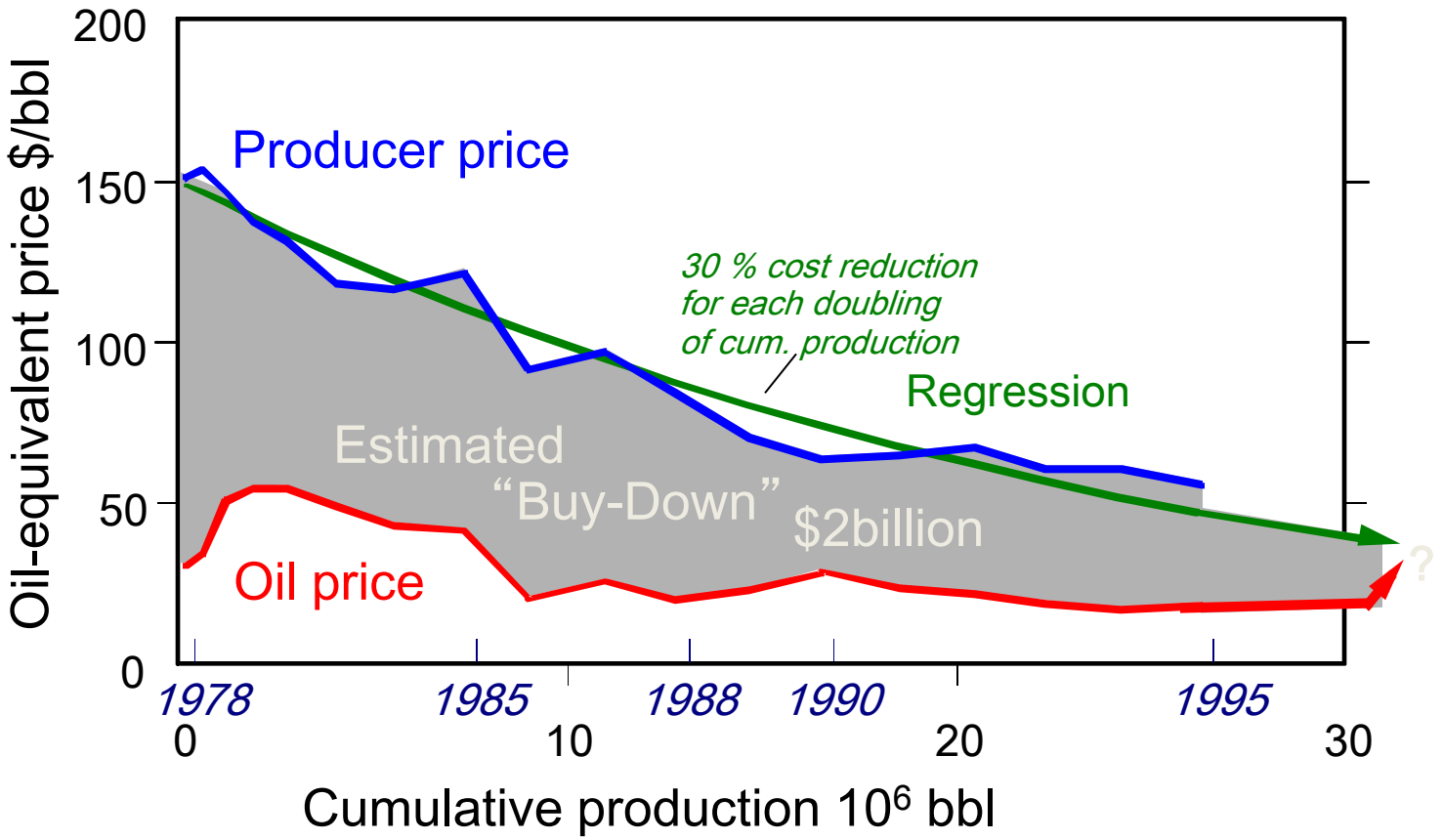
1. Work in “clubs” rather than universally
2. Focus on high leverage issues rather than “comprehensive” all gases and sectors
3. Focused on practical, conditional “pledges” rather than abstract emission targets
4. Engage “reluctant” countries
5. Expect fragmented rather than integrated law

Learning Curve for Solar PV Modules



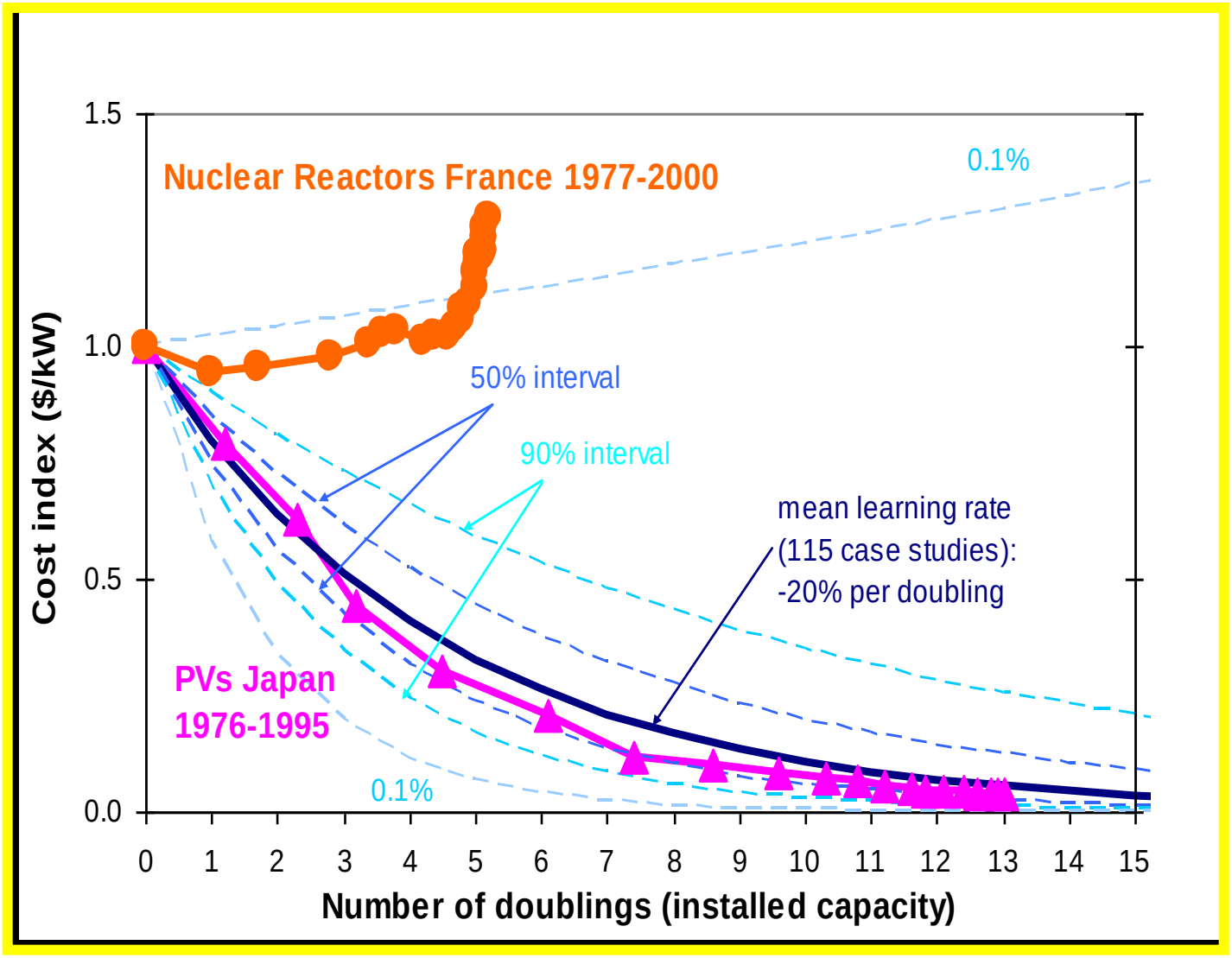
Source: NearZero.org expert elicitation on PV

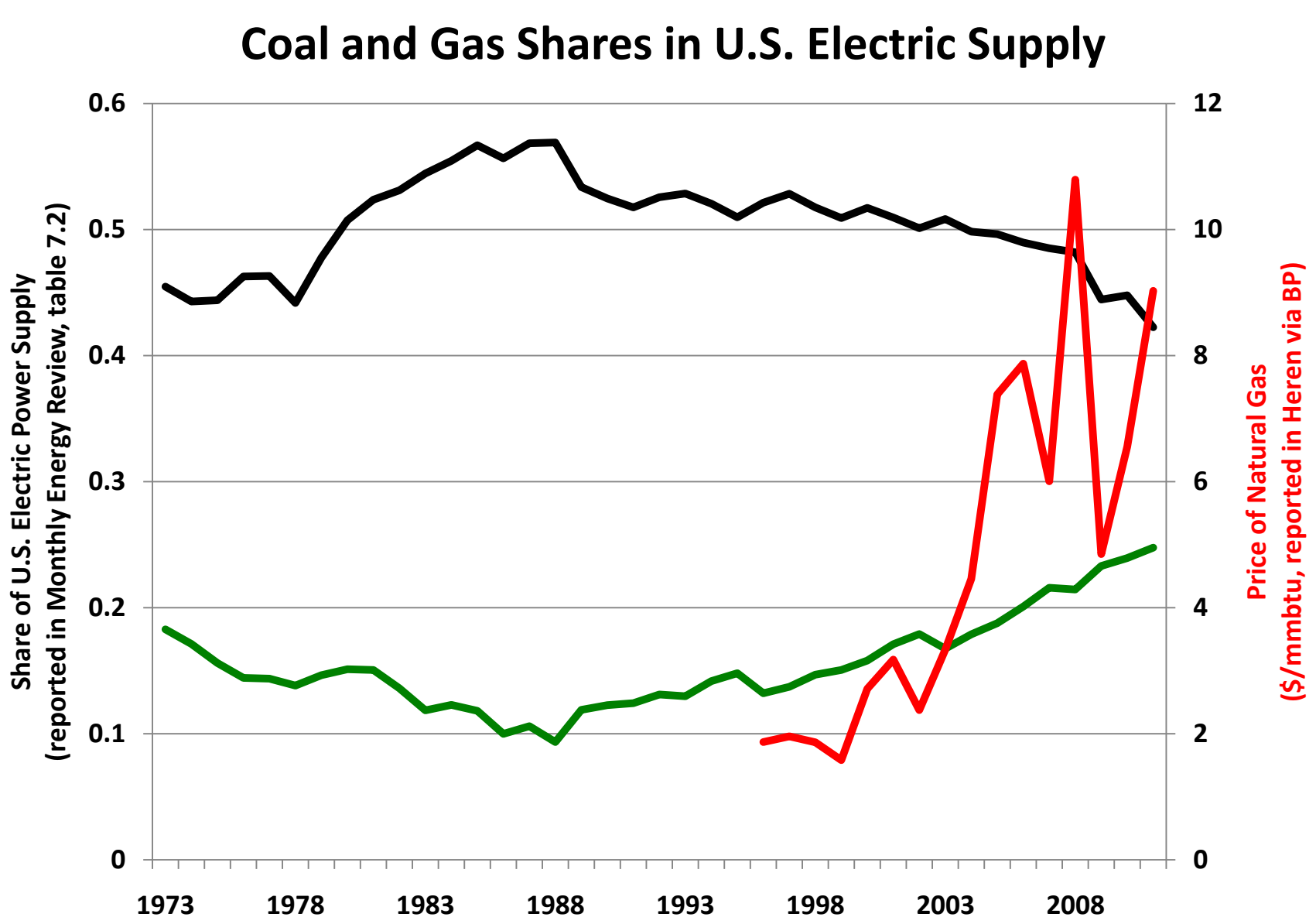
Brazil – Ethanol Learning Curve



Source: Grübler, 2002; Goldemberg, 1996

Technological Uncertainties: Learning rates (push) and market growth (pull)




Coal and Gas Shares in U.S. Electric Supply
Share of U.S. Electric Power Supply
(reported in Monthly Energy Review, table 7.2)
Price of Natural Gas
($/mmbtu, reported in Heren via BP)
0.6
0.5
0.4
0.3
0.2
0.1
0
12
10
8
6
4
2
0
1973
1978
1983
1988
1993
1998
2003
2008