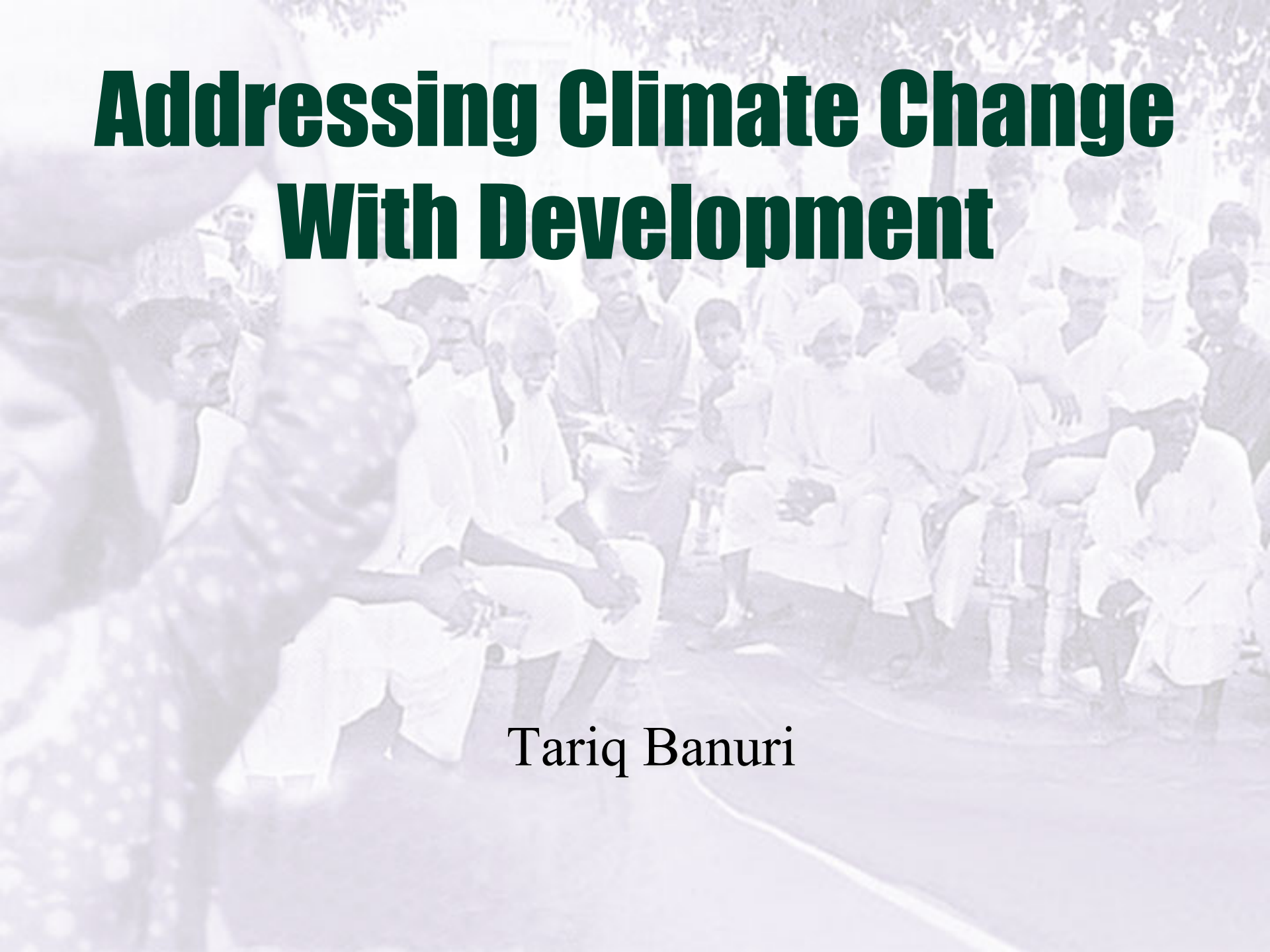
Addressing Climate Change With Development



Tariq Banuri

Background

Development is a positive sum game. When developmental gains are equitable, it leads to social stability, prosperity, and resilience

Climate change is largely being viewed as a zero sum game. This has created obstacles for cooperation and effective action.

A development-based approach to climate change focuses on full employment and energy security in North and catch-up growth and energy access in South

It would prioritize investment, policy guidance, strategic direction, and transparency

The Challenge

How to transform climate change from a zero sum game to a positive sum game?

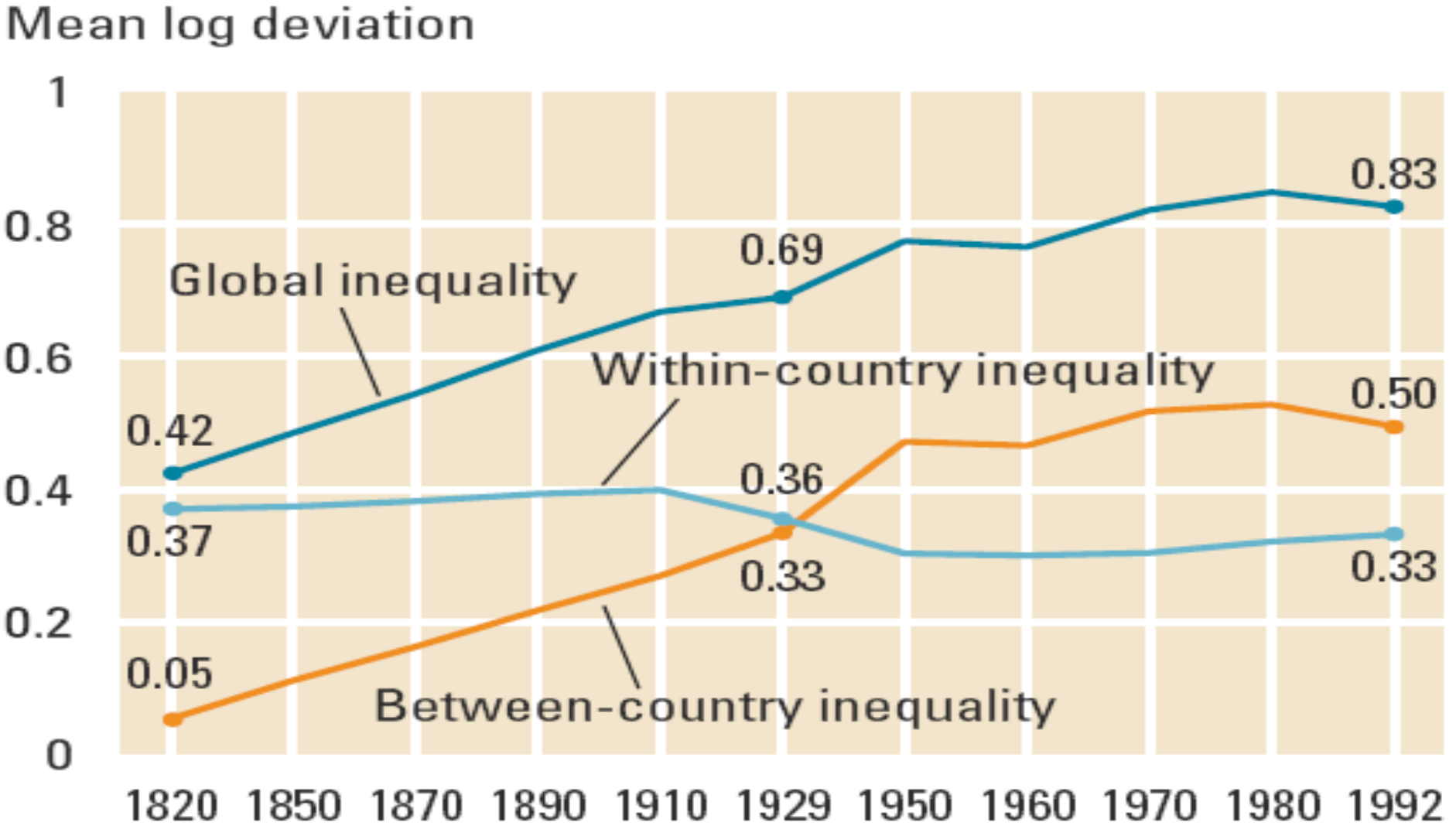
A development-based approach to climate change can enable developing countries to leapfrog; it can stimulate private sector activity; it can target global support into areas of common concern and effective action

Key messages

- Immediate Need: reduce emissions in rich countries, and slow (+ eventually reduce) in developing countries without compromising development momentum
- Investment-led approach for both goals
- Investments must be front-loaded, given danger of lock-in and importance of scale + learning economies for technology leapfrogging
- Strategic public investment to crowd-in private investment through integrated policies
- Focus of significant transfers (finance + technology) on the big push


DEVELOPMENT

Figure 3.10 Inequality between countries became much more important over the long run



Source: Authors' manipulation of data from Bourguignon and Morrisson (2002).

Stylized Facts: Development

- **Indicators: GNP, Energy, Taxation. But it is a Phase Change over a generation even if measured in annual increments.**
- **Examples**:
  - Japan (1945-72), Scandinavian (1945 to 1980), Mediterranean (1950 to 1986), NICS (1960 to 1990), BASIC (1990-?)
- **Challenges**:
  - **Social** inequity, jobless growth, rural poverty
  - **Environmental** degradation, pollution, climate
  - **Agricultural** (even if not driver), food security

Stylized Facts: Growth

- **Drivers**:
  - **Industry**: productivity, growth potential, linkages
  - **Energy**: Contribution to growth, HD, SD
  - **Trade**: scale economy, incentives, transparency
  - **Technology**: Especially ICTs, Renewable Energy
- **Patterns**
  - Ride the global wave(s), rather than go-it-alone
  - Contagion
  - Role of the developmental state
  - Structural Adjustment and the Lost Decade

A Race Between Growth and Catastrophe

- No country can live without growth (Rich and Poor)
  - Welfare: Full employment, social services
  - Development: end to permanent global inequality
  - Peace, security, democracy, and human rights
- The world cannot live long with current growth pattern
- contemporary history has become a race between growth and catastrophe
- But responses seem like a dialogue of the deaf

Three Development Strategies

Developing

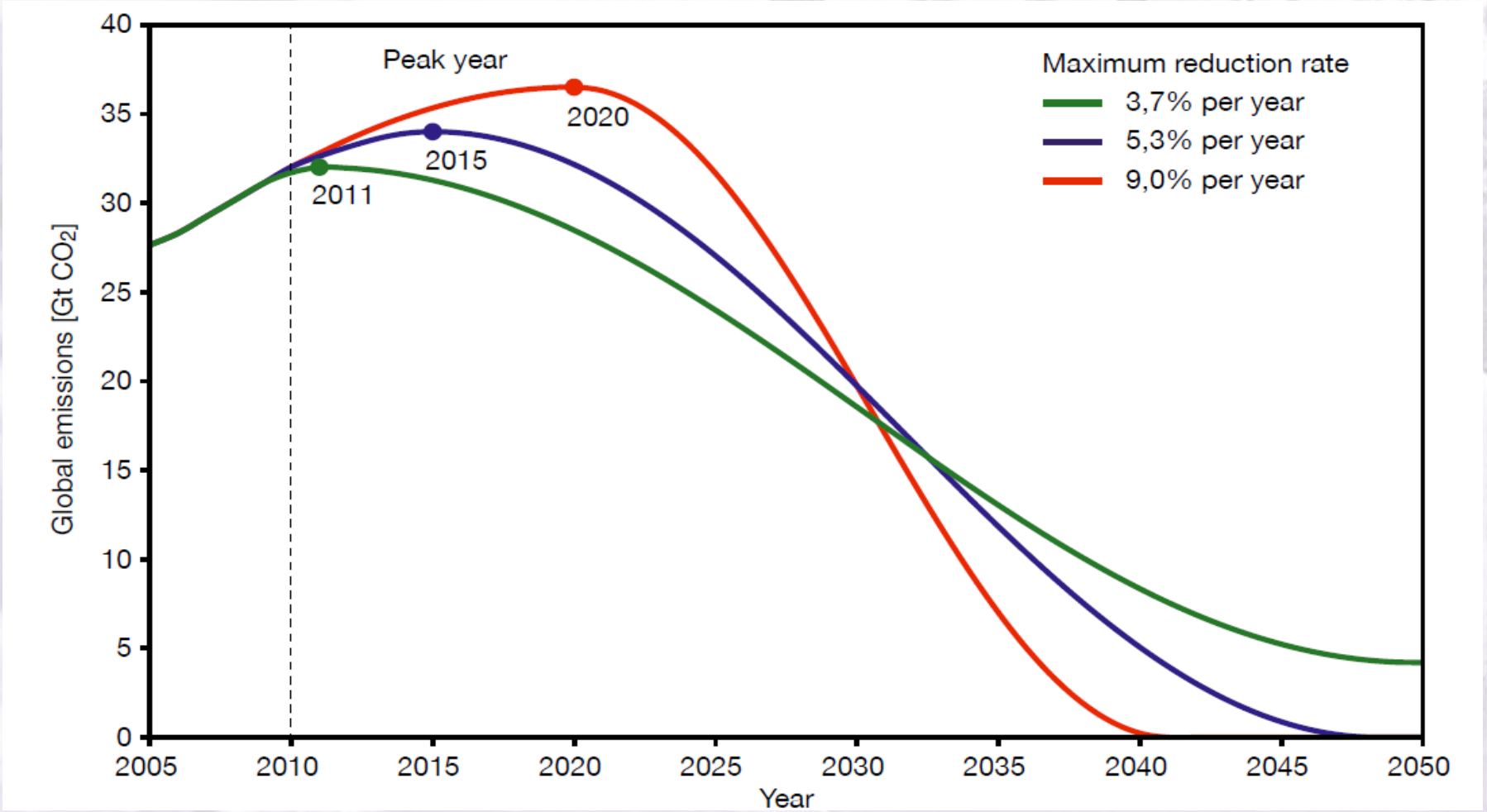
- Win the Race!
  - Accelerate development and/or poverty efforts: food, water, health, etc
- Bend the Curve!
  - Internalize Externalities: taxes, subsidies, prices and valuation
- Build a New Path
  - Technology (green energy revolution, ICTs)
  - Infrastructure

Developed

- Think Beyond Growth!
  - Convince all countries to slow down growth
- Transfer Technology and Finance.
  - Continue the aid model.
- Build a Cooperative Program.
  - ?

CLIMATE

The CO_2 Budget Approach

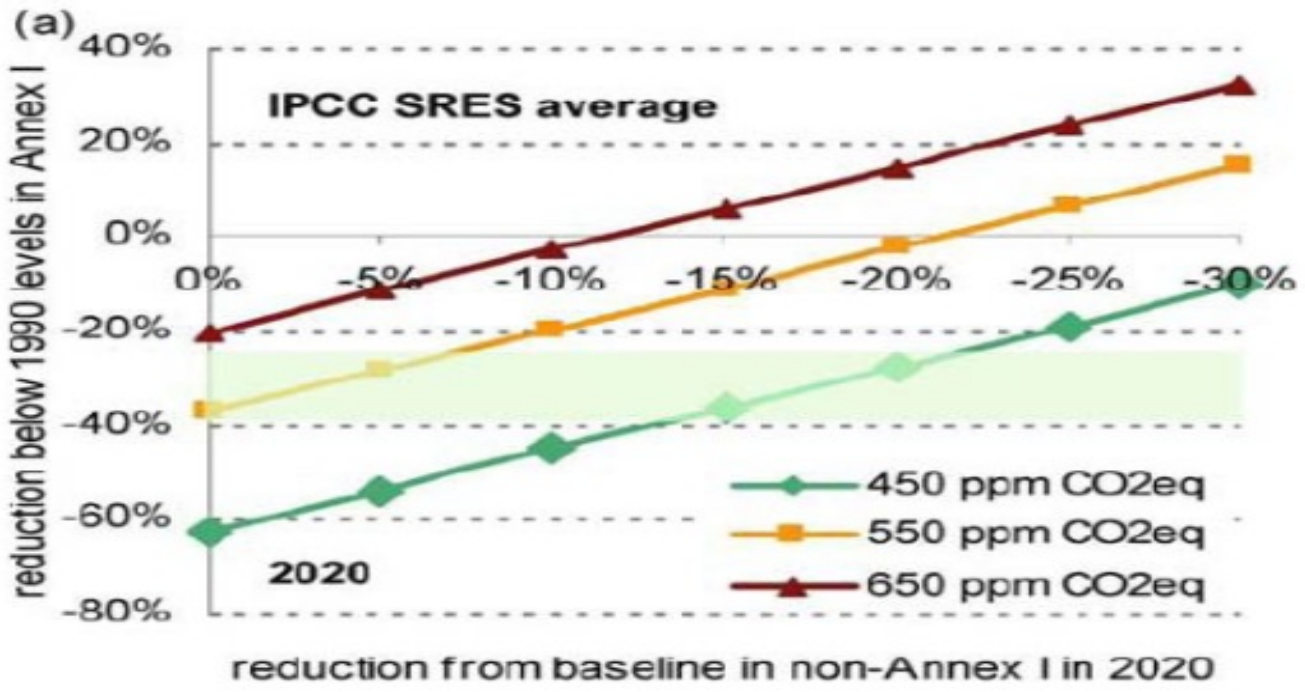


Emission pathways for at least 67% probability of staying under 2 °C warming. The total "emissions budget" for 2010-50 is 750 Gt.

Result: Tension Between Countries

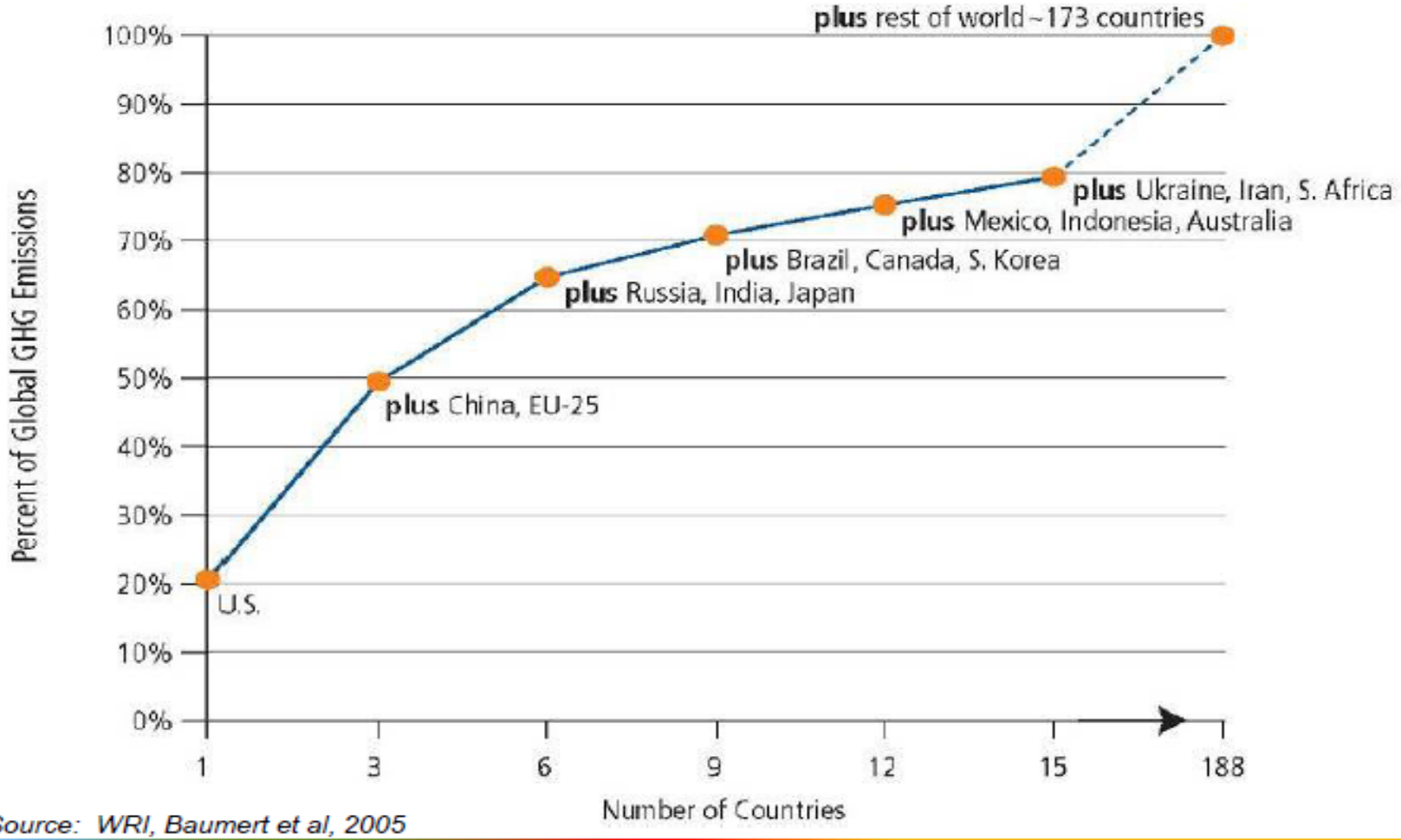
Trade-offs in reductions for Annex I and Non-Annex I emissions for different stabilization levels

Source: den Elzen and Hohne, Climatic Change Policy, 2008.



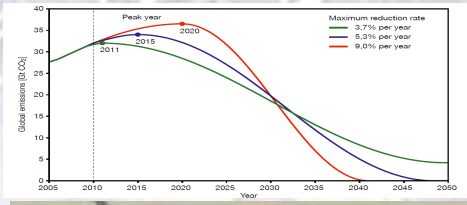
Result: Neglect of Smaller Countries

Largest Emitters: *Developed & Developing*



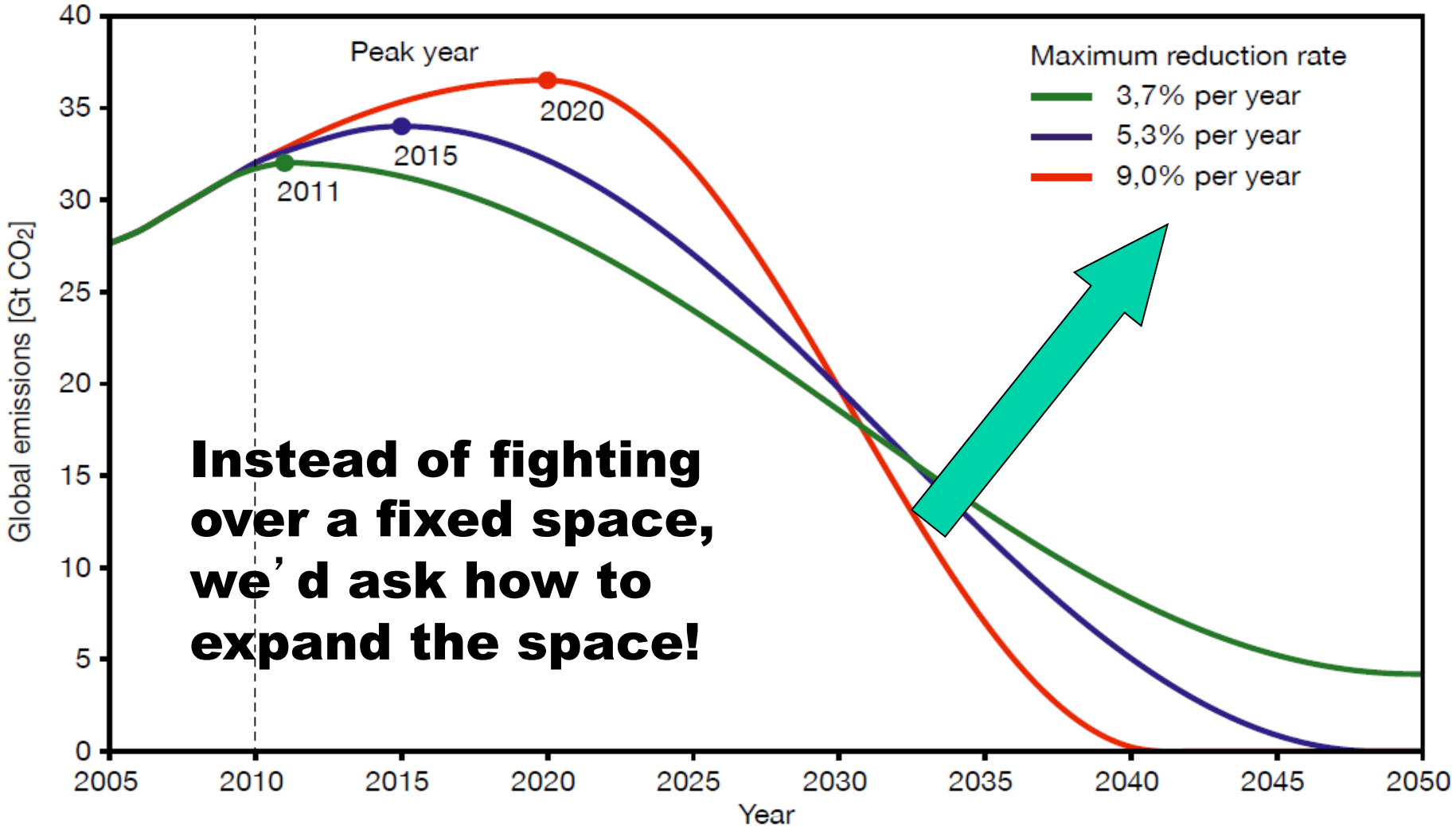
Source: WRI, Baumert et al, 2005

What's Wrong With this Approach?



- By turning climate policy into a zero sum game, it restricts room for action and makes cooperation difficult if not impossible.
- Q: How to transform it from zero to positive sum game
- Answer: Development-based approach.

What if the Chart was on Energy?

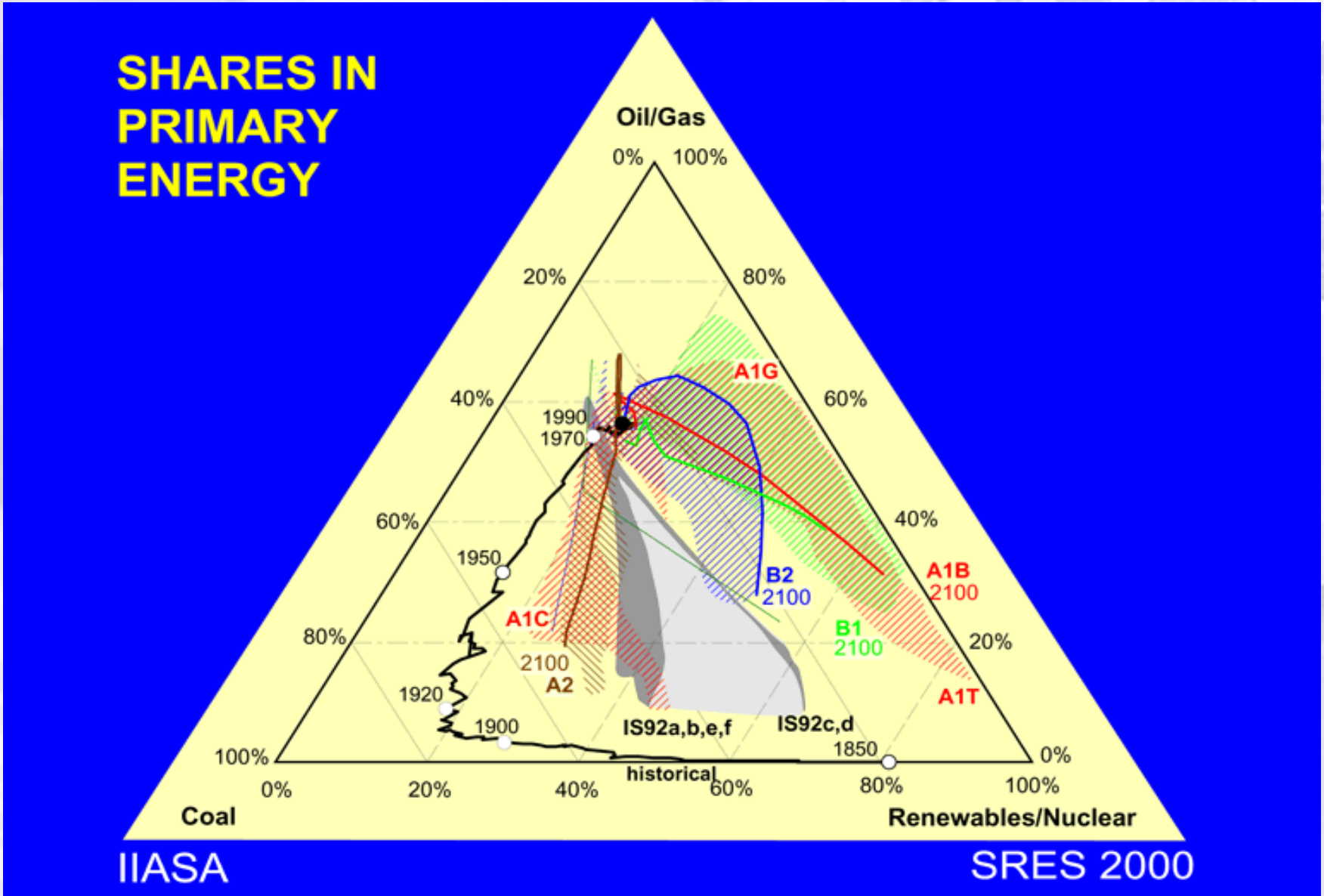


ENERGY

Energy is the Key

- Growth, Basic Needs, Human Development
- Recycling, reduction, reuse
- Even universal acceptance of democracy, human rights, and equity
- But also inequity between countries, and GHs (over 75% from energy and rising)
- Development needs mean 3-4 times more energy, affordable energy.
- Sustainability means clean energy

Energy Revolution –Pattern

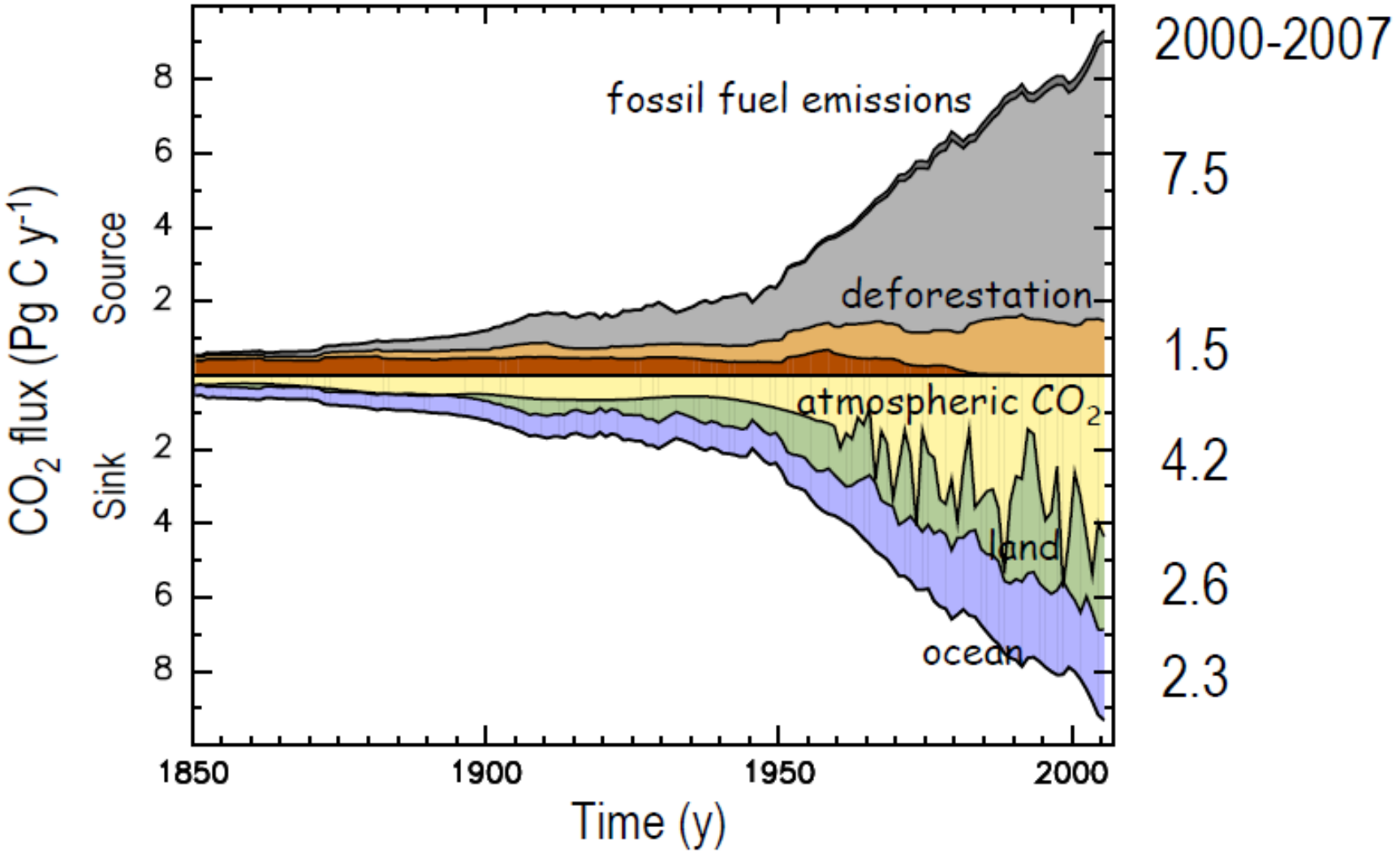


Energy Revolution –Economic Impact

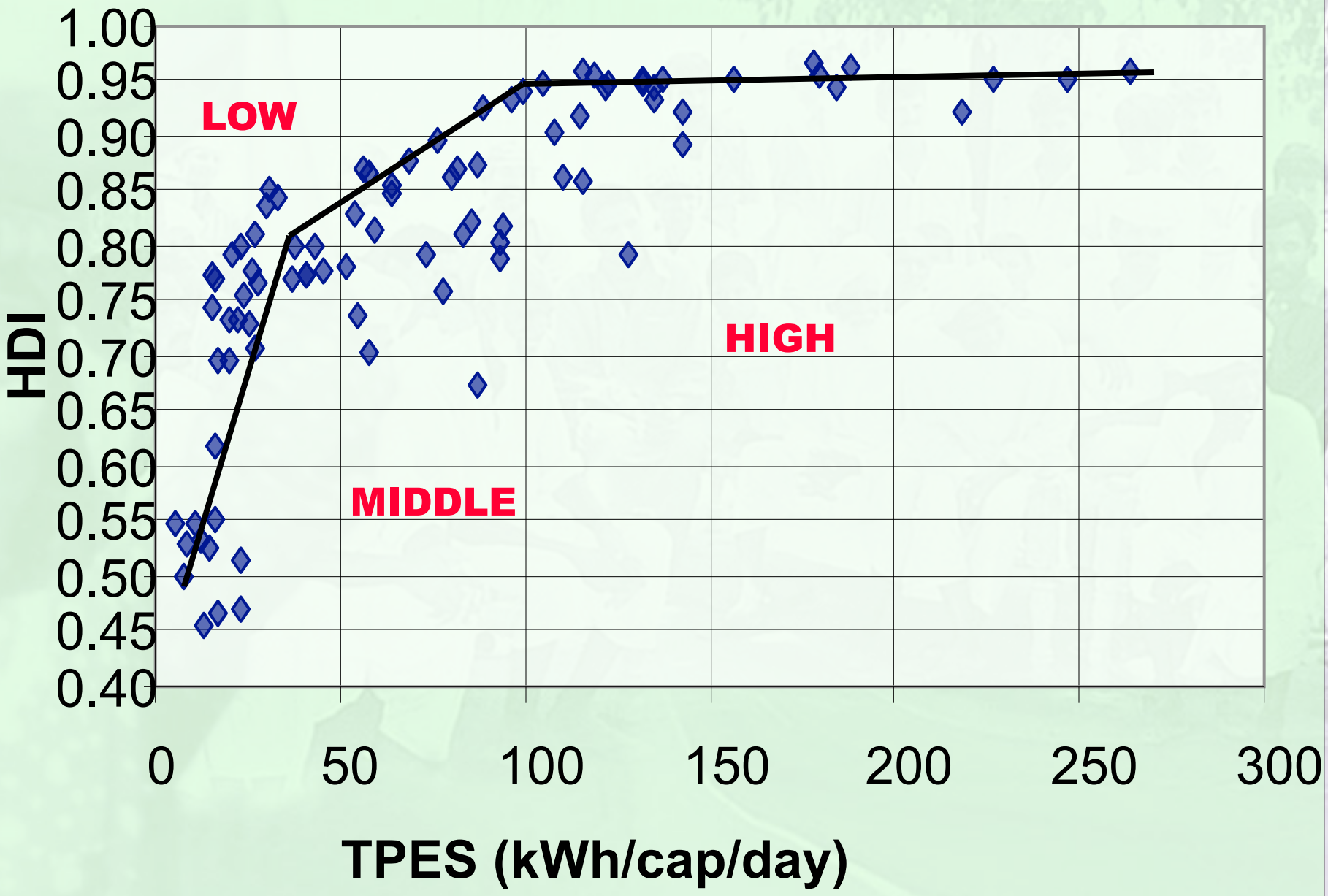
	1800	2000	Δf	2050	Δf
Population (billion)	1	6	x6	10	x1.6
GDP (trillion 1990 $)	0.3	30	x100	85-110	<x3-x4
Primary energy (EJ)	13	420	x30	600-1,040	x1.5-x2.5
CO_2 emissions (GtC)	0.3	6.4	x20	5-15	<x1-x3
Mobility (km/person/day)	0.04	40	x1,000	120-160	x3-x4

World Energy Council, 2004

Energy Revolution –Emissions



Global Carbon Project (2008)


1.00
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0.90
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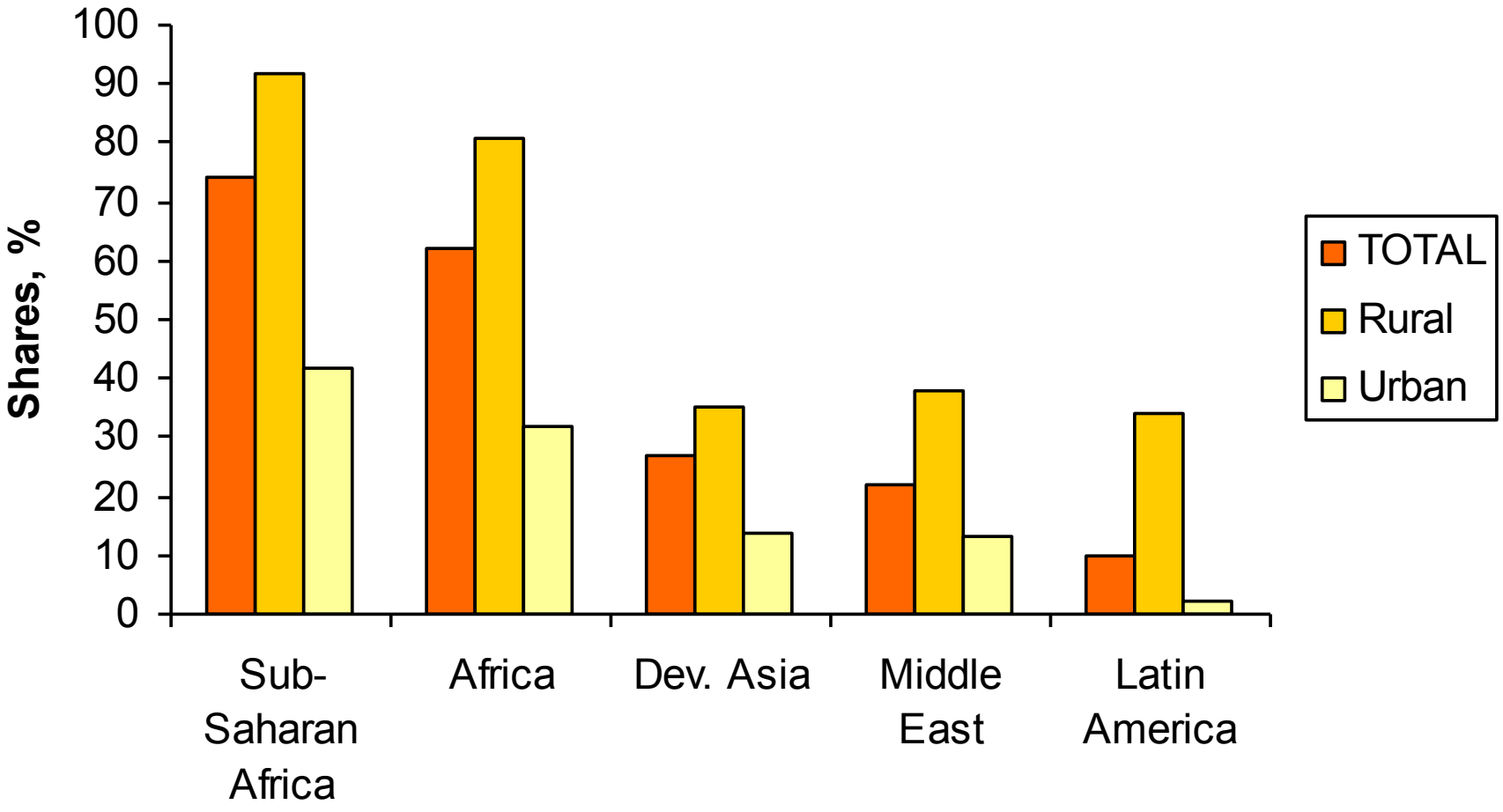
HDI
LOW
MIDDLE
HIGH
0
50
100
150
200
250
300
TPES (kWh/cap/day)

Energy Consumption (kWh/cap/day)

Country	Final	Excluding industry	TPES	Electricity
US	167.07	137.26	246.62	39.01
Germany	98.09	76.05	134.84	20.39
Korea	95.71	68.96	142.83	21.12
China	29.19	16.41	45.63	4.61
India	10.87	7.74	16.25	1.61
Brazil	30.39	18.27	37.73	6.41
Nigeria	20.85	18.59	23.13	0.43

Share of Population without Electricity



Reconciling two Strategies

- *Adjustment*: A key plank of global climate strategy is to raise conventional energy costs (by raising carbon costs (carbon tax or cap and trade).
- *Investment*: Developing countries have tried to address energy poverty and HD by lowering the costs of energy for low income groups, through investment (including technological learning), but with subsidies in short run

A Question of Costs

- OECD: 10-20 cents per kWh, higher for final consumers than for industry and commerce.
- Old energy is cheap, new energy is costly, renewables costliest ($0.10-0.50/kWh+++)
- At 20 cents, countries with $2 per cap per day would afford 5 to 15 kWh/day.
- Developing countries need energy at 3-5 c, which means about $1/Watt in investment costs. CAN THIS BE ACHIEVED?

Energy (kcd), GDP ($), Prices (c/kWh)

Region	TPES	Elec Tot (HH)	Prices	PCGDP
World	55	6.8 (1.8)	3-30	8,579
OECD	174	25.6 (6.6)	10-20	39,345
China	45	5.3 (0.7)	..	2770
India	16	1.3 (0.3)	4	1010
Africa	16	1.6 (0.4)	5+	1082
Brazil	38	6.4 (1.2)	9.3	7350
Korea	143	21.1 (3.0)	9.8	21530
Russia	145	15.9 (1.9)	..	9620

Affordability

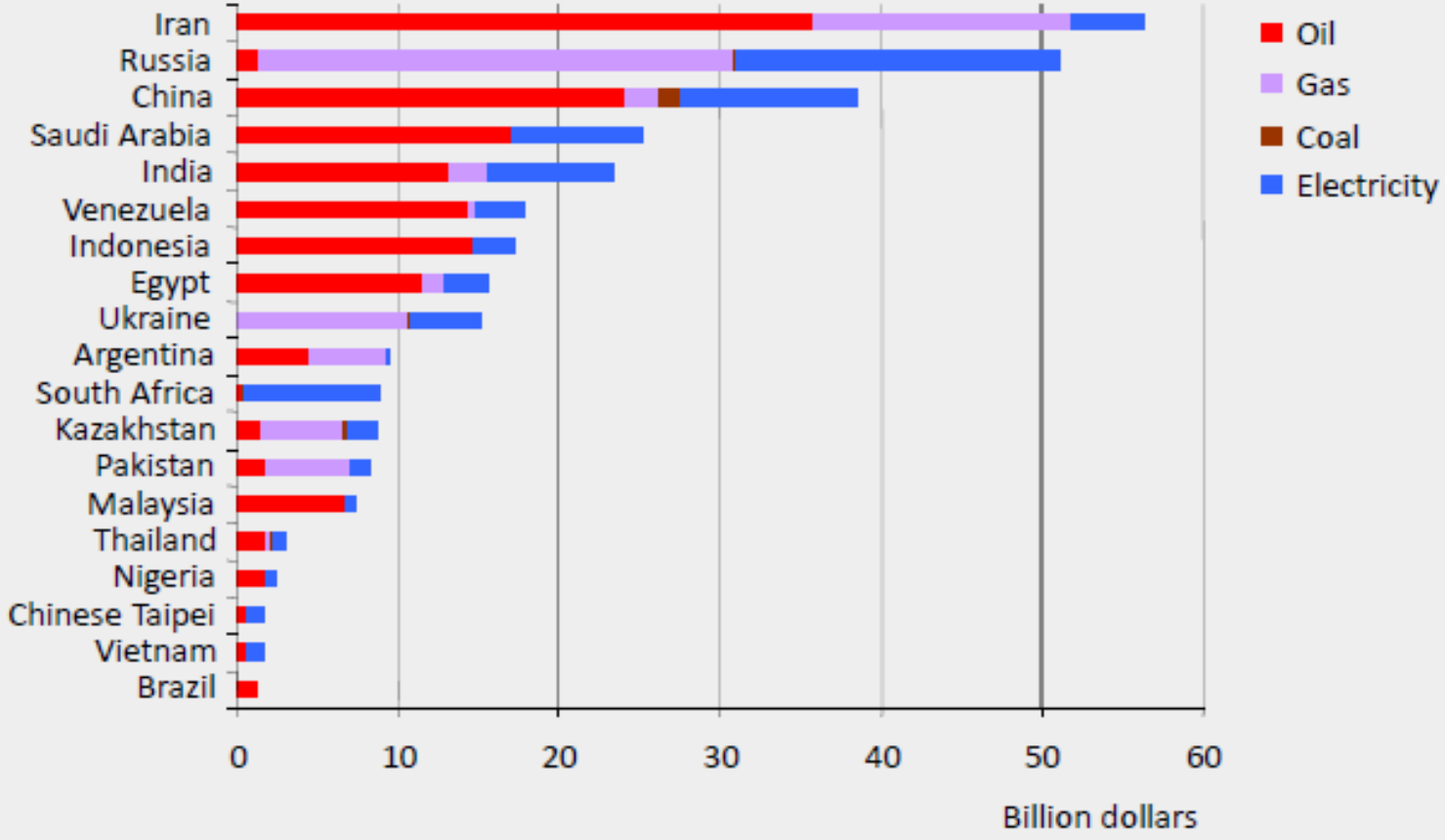
Income $/cap/ day	Energy Budget 10%	Affordability kWh/day at prices (cents/kWh)		
		6	10	20
India ($2)	$0.20	3	2	1.0
Egypt ($5)	$0.50	8	5	2.5
China ($7)	$0.70	12	7	3.5
Peru ($10)	$1.00	17	10	5
Croatia ($30)	$3.00	50	30	15
OECD ($100+)	$10.00	166	100	50

How Developing Countries Cope?

- *Exclusion*: Many people have no access to modern energy.
- *Environmental stress*: Reliance on inefficient but cheap biomass
- *Regressivity*: Energy expenditure share falls with income (2- 30%, median 10%).
- *Targeted Subsidies*: block tariffs, low diesel and kerosene prices, low quality public transport.

Energy subsidies in non-OECD countries, 2007

World Energy Outlook 2008



Energy subsidies in the 20 largest non-OECD countries hit $310 billion in 2007 – creating, in many cases, an unsustainable economic burden & exacerbating environmental effects

Costs can be Lowered

	2006-10	2011-20	2021-30
Biomass	5%	5%	5%
Geothermal	5%	5%	5%
Large Hydro	1%	1%	1%
Small Hydro	1%	1%	1%
Solar PV	17.5%	15%	10%
Solar thermal	13%	10%	7.5%
Tidal /Wave	15%	12.5%	10%
Wind onshore	0%	6.5%	5%
Wind offshore	0%	20%*	15%*

Is there a Better Strategy

- Many countries are seeking to become leaders of the new economy. For example, look at China
- China investment in power sector about $70-80 bn/ year. 80% of electricity is from coal.
- Double capacity by 2020 (additional 860 GW)
- In 2008, 22% fall in coal power investment (vs rise in hydro, nuclear, and wind), closing down of old plants, and increased efficiency.
- Chinese costs already lower than elsewhere (including “clean coal”, which is competitive).
- Faster action requires external subsidies.

But it Needs a Global Partnership

- *Global Feed-in-Tariffs*: Identify technologies, consumers, and subsidies. A fund of $100 bn annually 2010-20. Channeled through energy systems on the basis of output delivered.
- *Global Climate Corps*: Patterned on the Civilian Conservation Corps during the New Deal and the Peace Corps from the 1960s, a cadre of professionals to support energy efficiency and renewable energy initiatives
- *National Support*: Patterned on the Green Revolution, support for institutions of research, extension, credit, and inputs provision in the energy sector.

Alternative: Make Climate History

- Use Public Sector Investment as Driver: Enable developing countries to leapfrog—not "pollute first clean up later".
- Set a Target: $1/W Renewable Energy
  - How to lower costs
  - How to make renewable energy affordable
- Global partnership on RE

Sources of finance

Urgent need to scale up existing + innovative sources of financing:

- Official development assistance
- Carbon credits (but need higher emissions commitments)
- International taxes or levies
- Reallocation of existing spending
- Global feed-in tariffs support

Thank you

Please visit:

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Research papers, policy briefs, others

Acknowledgements:

Imran Habib Ahmed, Alan AtKisson, Tariq Banuri, Richard Kozul-Wright, Jomo KS, Manuel Montes, David O'Connor, Robert Vos