



Framework for India's Engagement in Climate-Change Mitigation Efforts

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Challenges with Climate Change Policymaking

- Decision-making under uncertainty
- Cost effectiveness
- Credibility and trust

Climate Change a Collective Action Problem

- Over time international public goods have increased, but capacity for intergovernmental coordination has declined
- Two key aspects of successful multilateralism: N-I Effect
 - *N*: Small group of countries (G-5 etc.)
 - *I*: Convergent interests

Main Arguments in the Paper

- Substitute CDM with Climate Accession Deals (CADs)
- Framework for engagement
 - Must align with India's core interest
 - Actions taken must be credible
- India's interests and climate-change mitigation not a zero-sum game

Framework for Engagement

Aligning Interests, Capabilities, and Leverage

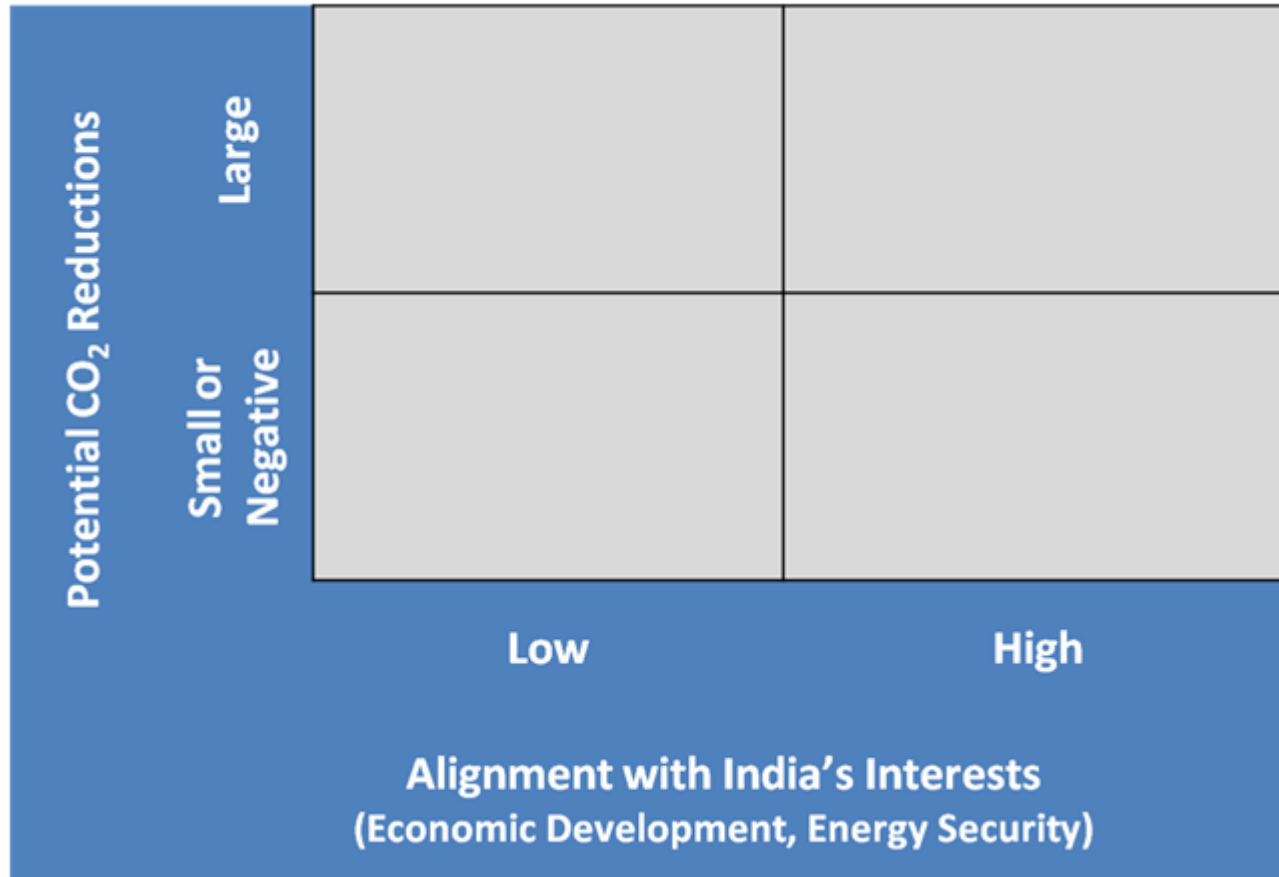
The only serious and viable approach for India's engagement in global efforts to tame global warming is one that aligns with India's own core interest

- Interests: Economic development and Energy security
- Capabilities: Outside help needed?
- Leverage: Ability to successfully implement programs

Rai, V and Victor, D. G., "Climate Change and the Energy Challenge: A Pragmatic Approach for India", Economic and Political Weekly, 44(31), p78-85, August 2009

CO₂ Reductions and India's Interests

Framework for Potentially Viable Options



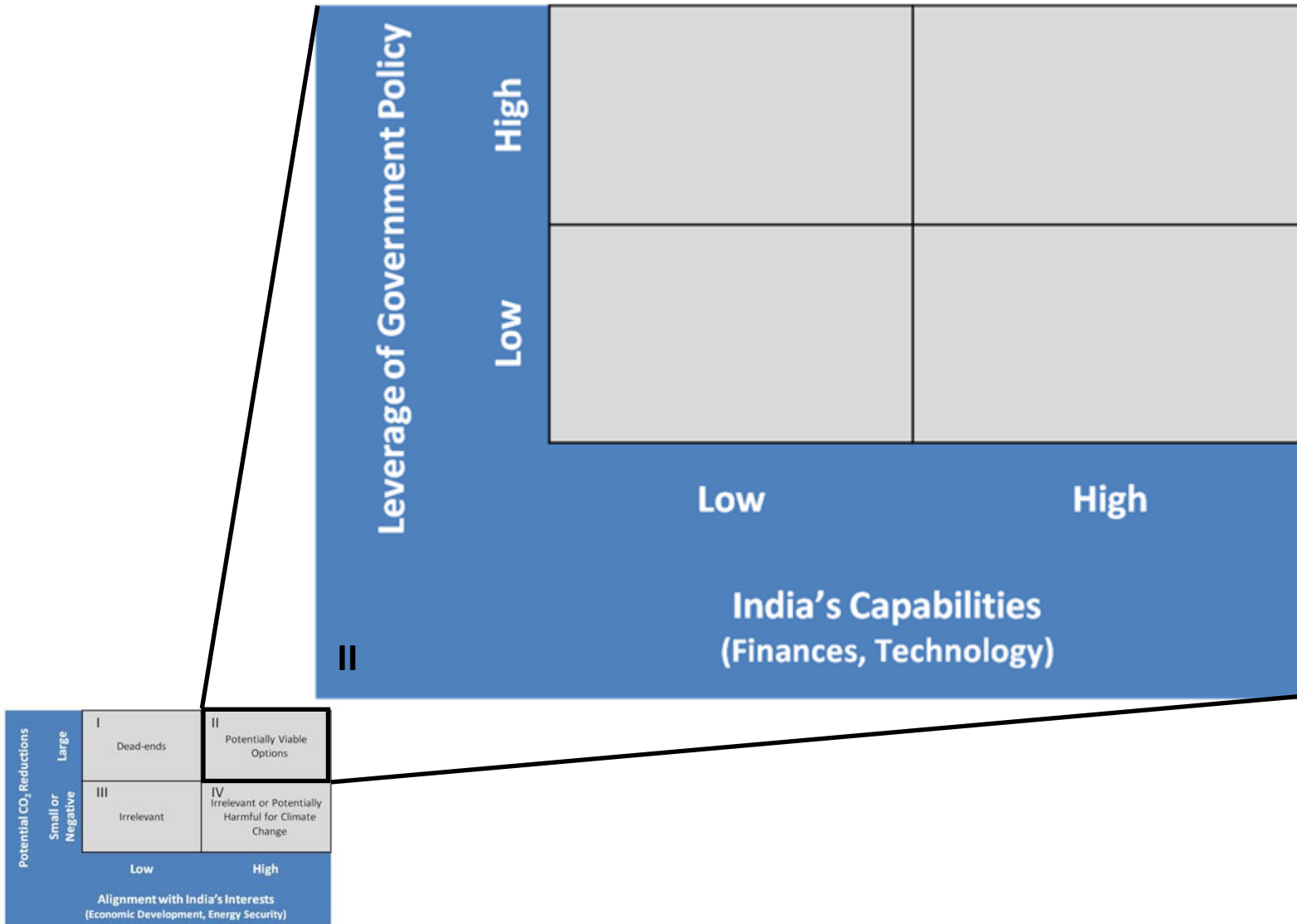
CO₂ Reductions and India's Interests

Framework for Potentially Viable Options

Potential CO ₂ Reductions	Large	I Dead-ends	II Potentially Viable Options
	Small or Negative	III Irrelevant	IV Irrelevant or Potentially Harmful for Climate Change
		Low	High
Alignment with India's Interests (Economic Development, Energy Security)			

Leverage and Capability

Viable Options



Leverage and Capability

Viable Options

Leverage of Government Policy	High	<u>Outsiders can Help</u> Programs up for “bids” IIa	<u>Domestic-led</u> Delhi can make a difference IIb
	Low	Irrelevant Now	Irrelevant Now
		Low	High
India’s Capabilities (Finances, Technology)			

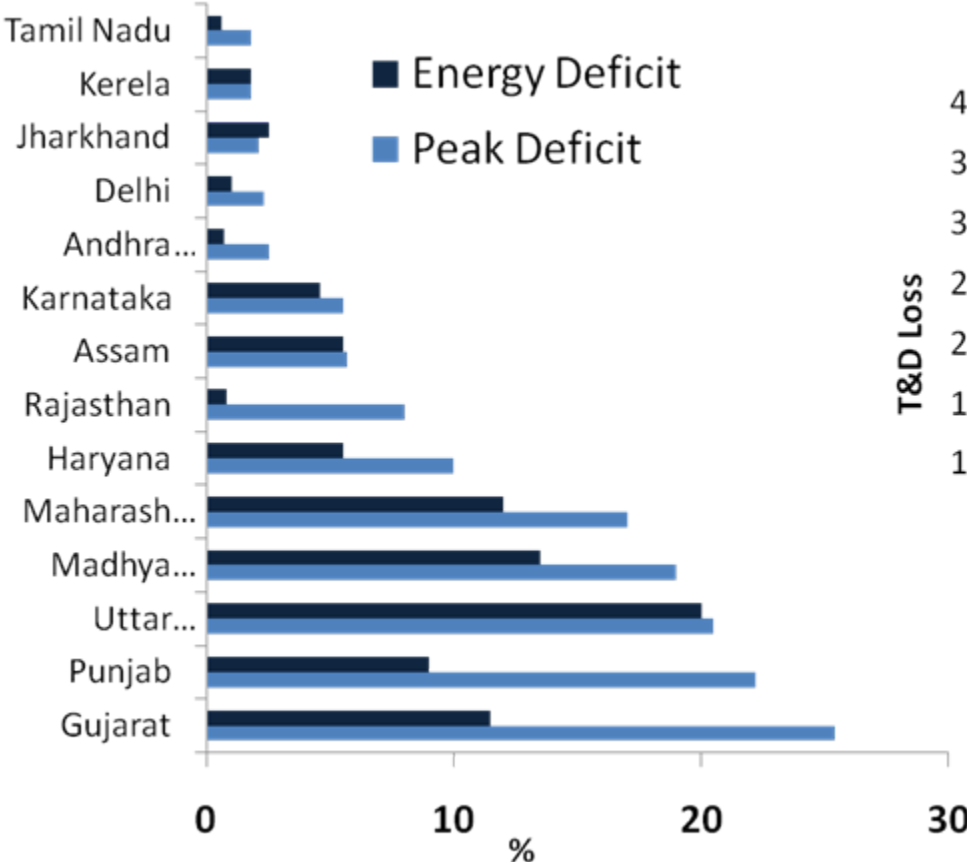
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Applying the Framework

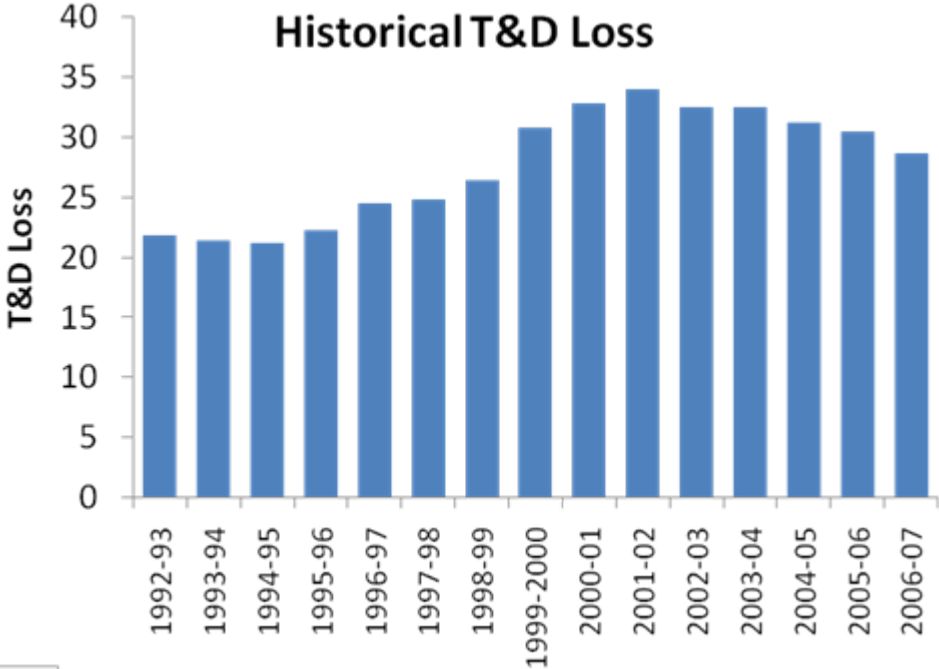
Concrete Suggestions for Action

- Electricity reforms and CO₂ reductions
- Efficiency of India's coal-based power generation
- Advanced cookstoves and atmospheric brown clouds
- Transportation reforms and taxation
- Mandatory Building Conservation Efficiency Code
- **Population control**

Electricity Woes of India



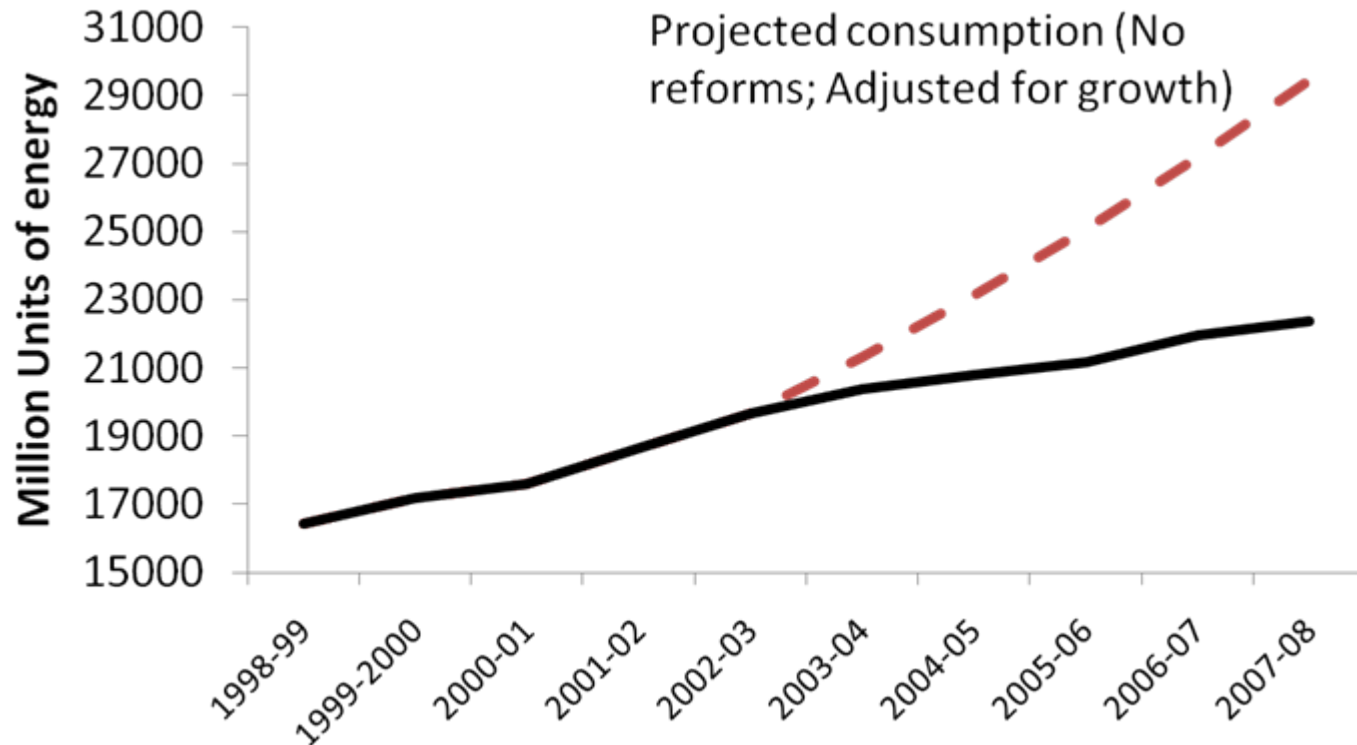
Source: Integrated Energy Policy, Government of India (2006)



Source: Planning Commission, State Electricity Boards

Electricity Reforms Reduce Electricity Demand

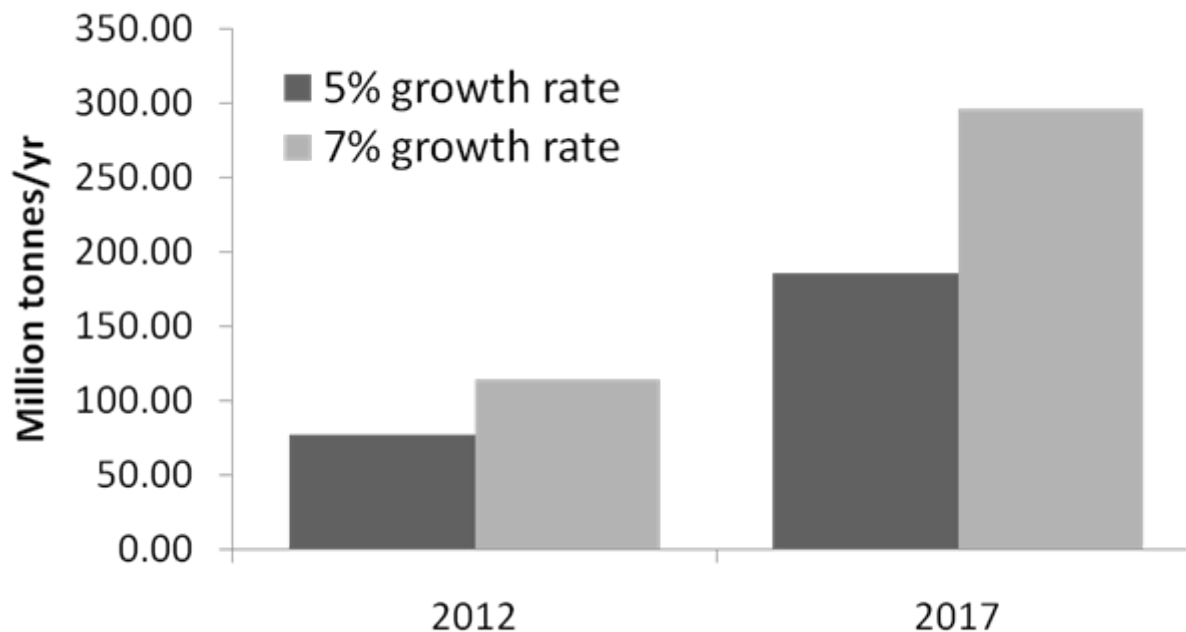
The Curious Case of Delhi



Cumulative emissions reductions between 2003-04 to 2007-08 for Delhi amounts to 15.6 Mt CO₂

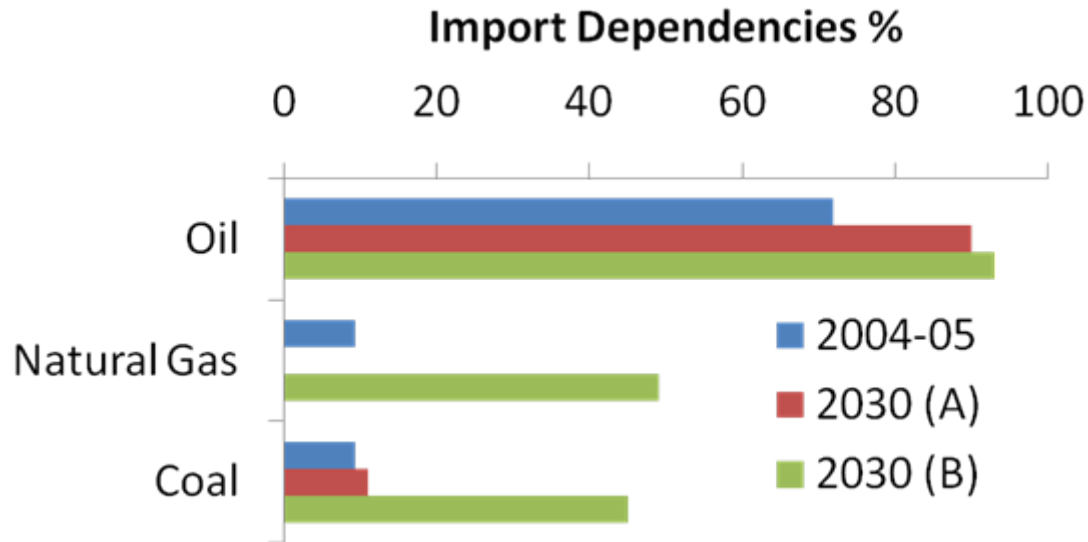
Electricity Reforms and CO₂ Reductions

Projections for India



For the 7% growth rate scenario, cumulative emissions reductions by 2017 is over 1 Gtons CO₂

Coal Demand in India

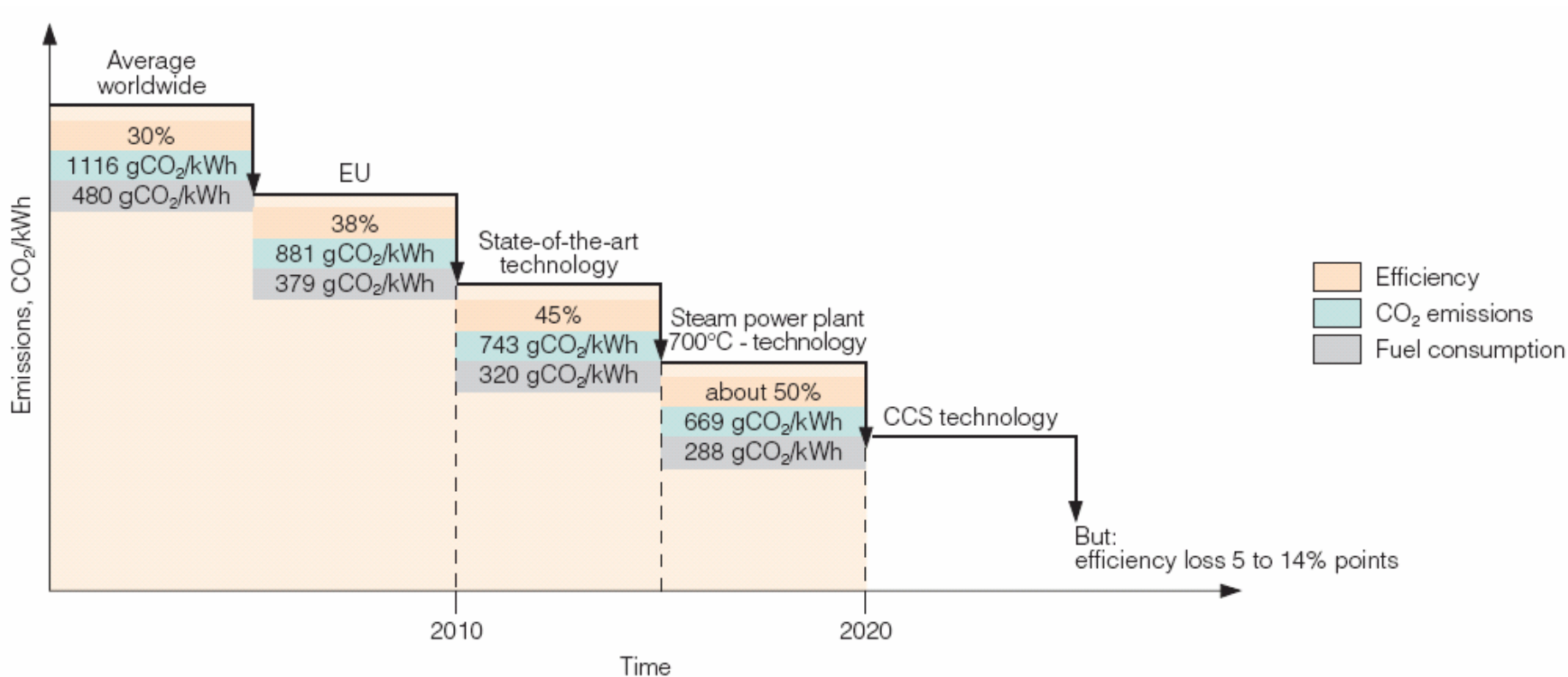


Scenario A: Minimum requirement, maximum domestic production

Scenario B: Maximum requirement, minimum domestic production

Efficiency of Coal-based Power Plants

Lower Coal Demand and CO₂ Emissions



Source: "Competitiveness of Coal-fired Power Generation", IEA (September 2008)

Indian Coal-Efficiency (ICE) Program

Program to improve efficiency of coal-fleet from 30% to 40% over two decades (2010-2030)

- Impact by 2030 (conservative scenario)
 - Over 400 MtCO₂/yr reductions
 - 250 Mt/yr less coal needed
 - 90 GW less installed capacity
- Outsiders can play an important role
- Success of the program will be a measure of how serious outsiders are in engaging India

Atmospheric Brown Clouds

- Thick layer of smog from black carbon over South Asia and northern Indian Ocean
- Strong net warming effect of black carbon: $+0.4 \text{ W/m}^2$ to $+0.9 \text{ W/m}^2$
- Research shows that two-thirds of black carbon come from biomass burning

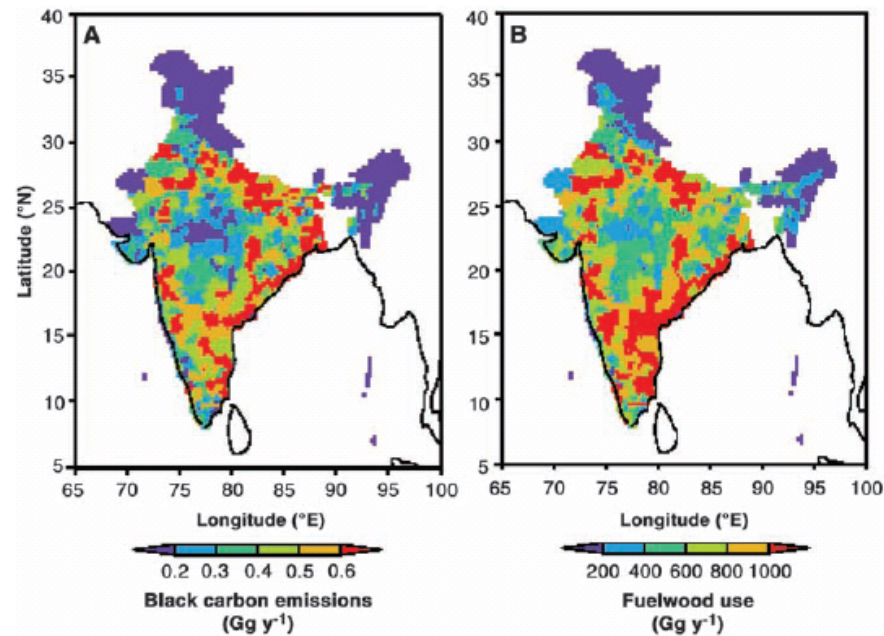


Fig. 1. Spatial distribution of (A) black carbon emissions (Gg year⁻¹) from biofuel combustion and (B) fuelwood use (Gg year⁻¹) in India.

Source: Venkataraman, C. "Residential Biofuels in South Asia: Carbonaceous Aerosol Emissions and Climatic Impacts" Science 307, 1454 (2005)

Human Welfare and Combating Climate Change

Advanced Cookstoves

Program to replace 60 million (half of potential) biomass stoves at a total cost of \$300 million (Rs. 1500 Crores)

- Impact

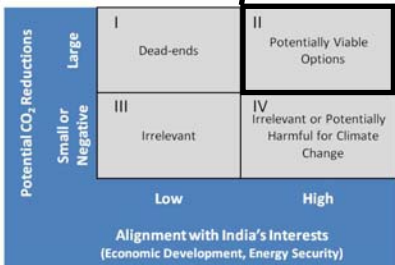
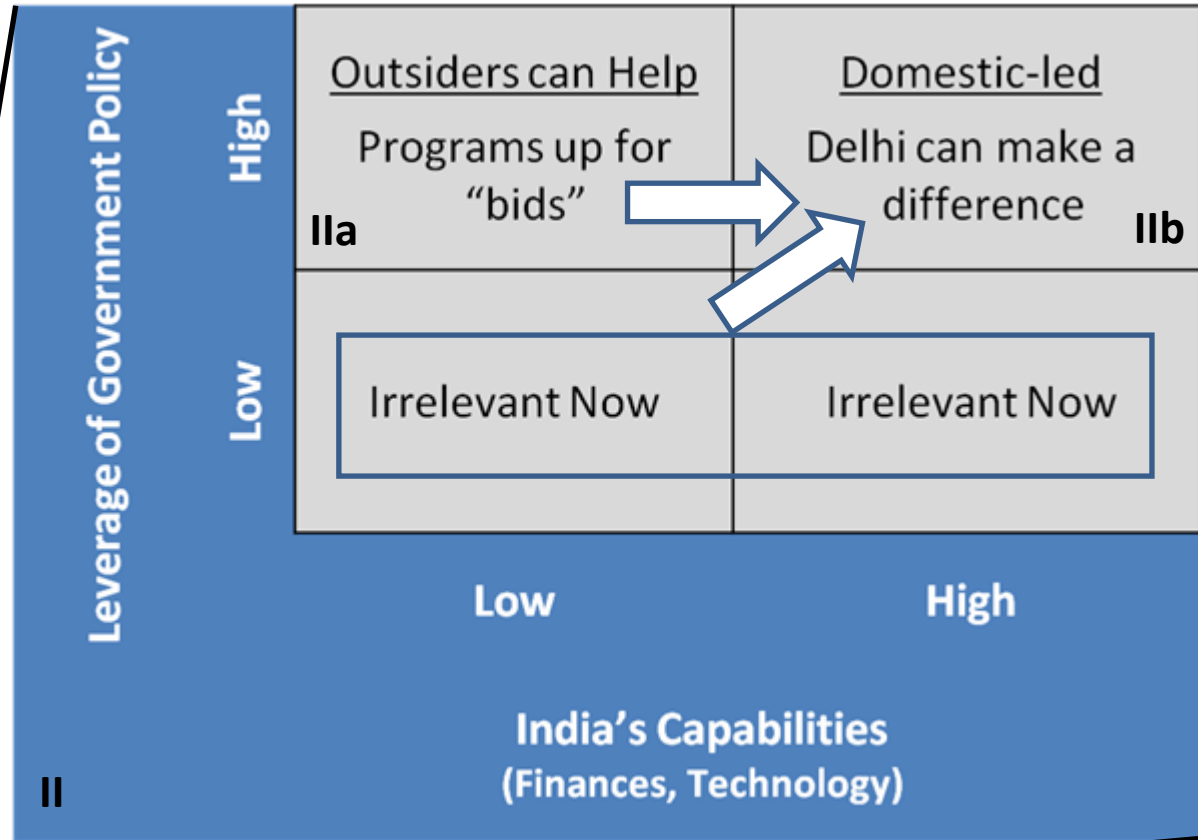
- 200 MtCO₂/yr reductions (rough estimate)
- Dramatically improved indoor pollution standards

- Outsiders can be useful here too

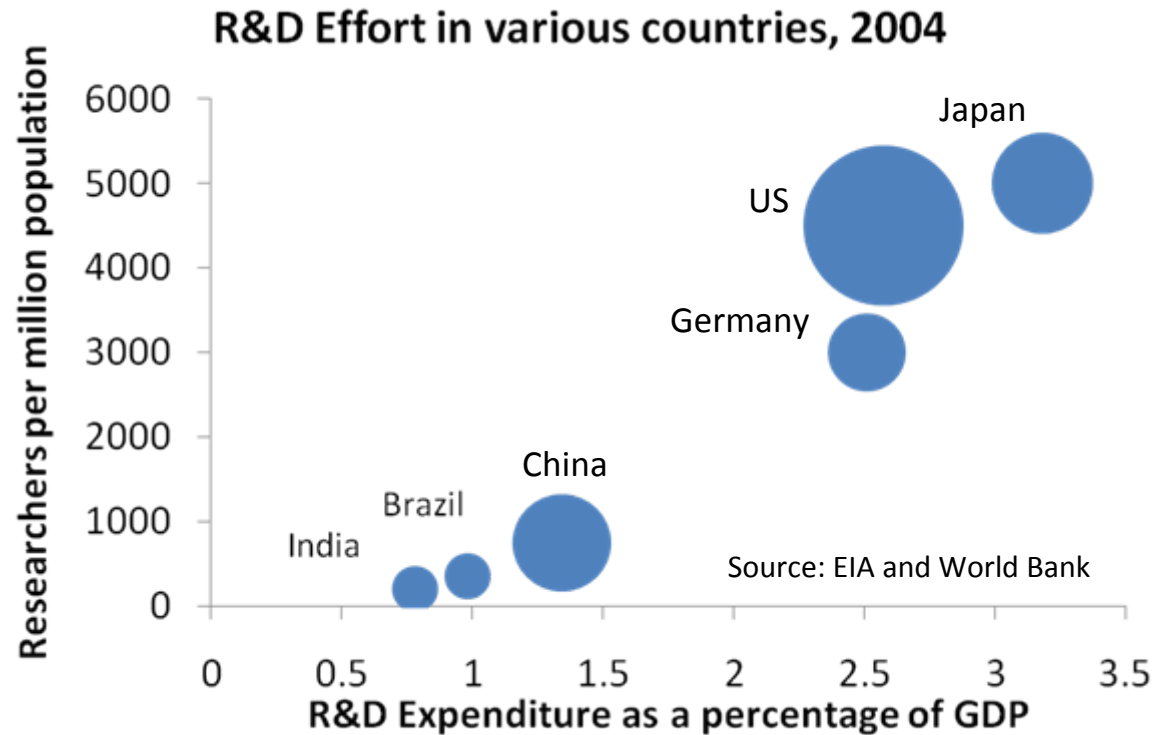
- Programmatic financing
- Program development and coordination

Beyond Boxes IIa and IIb

Building Capability and Future Leverage



Advanced Technologies and R&D



- Energy-related R&D will be enabling for India to spearhead its own technology-based mitigation response
- Results will take a long time (two-three decades), so R&D not a medium-term response strategy

Other Action Items

- Need to create a National Information Administration for Energy (NIAE) that would serve as the central repository of all energy-related data in India
- Globally coordinated R&D on major green technologies

Putting Together International Deals

- WTO can serve as a model*
- India can propose what it can do on its own (IIb) and what it needs outside help with (IIa)
- Negotiations would craft deals with those two elements plus outside support
- As IIa contingent on outside support, **the deals will be largely self-enforcing**

*Victor, D. G., “Global Warming Policy after Kyoto: Rethinking Engagement with Developing Countries”, PESD Working Paper #82, Stanford University, January 2009

Copenhagen Stance

- Stringent cuts by developed countries by 2020 and 2050
- Discussion on when and how much India will take on binding cuts contingent on developed-countries' results
- India agrees to deliver on the low-hanging reductions

Conclusion

- Aligning India's core interests with mitigation action key to the success of any engagement strategy
- Contrary to conventional wisdom, cost of engagement not high