Inducing Innovation for Climate Change Mitigation

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The climate technology problem

- Stabilizing greenhouse gas (GHG) concentrations ultimately implies zero net emissions

- Will require large-scale, widespread global adoption of low-GHG energy technologies

- Doing so at reasonable cost will require substantial innovation to expand our options

- But views differ about the best policies for inducing this technological transition
Emissions price is key for technology

- Emissions price guides deployment of the most cost-effective mitigation technologies
- Creates demand-driven incentive for private sector development of new climate-friendly innovations
Well-targeted technology policy can reduce future mitigation costs

- Mitigation science and technology policy can reduce costs if it focuses on knowledge creation
  - knowledge is a public good just like a stable climate
- Four-part innovation policy strategy
  - reinforce incentives for private R&D
  - expand federal resources for research
  - improve climate mitigation research management
  - experiment with new research policy instruments
Mitigation innovation policy strategy

1. Encourage private sector research by making the R&E tax credit permanent

2. Double relevant federal research spending to about $7 billion/year over the next 10 years
   - offset by small portion of revenues from emissions price
Energy R&D for climate mitigation should double from $3.5B to $7B/year.

$20B total extra cost over 10 years.
Health R&D spending doubled over 10 years
Mitigation innovation policy strategy

1. Encourage private sector research by making the R&E tax credit permanent
2. Double relevant federal research spending to about $7 billion/year over the next 10 years
   - offset by small portion of revenues from emissions price
3. Improve research strategy and coordination
   - invigorate the Climate Change Technology Program
4. Experiment with innovation inducement prizes
Poorly-designed technology policy raises costs

- Government support should emphasize areas least likely to be undertaken by the private sector
  - strategic basic and applied research
  - training the next generation of researchers
- Technology approaches must complement rather than substitute for emissions pricing
  - R&D without market demand for the results is like pushing on a rope
  - technology deployment mandates/subsidies tend to increase societal costs relative to emissions pricing