

The Green Economy under the U.S. Obama Administration

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Obama proposals

- Climate

- Ensure 10 percent of our electricity comes from renewable sources by 2012, and 25 percent by 2025.
- Implement an economy-wide cap-and-trade program to reduce greenhouse gas emissions 80 percent by 2050

- Energy

- Increase Fuel Economy Standards
- Get 1 Million Plug-In Hybrid Cars on the Road by 2015.
- Create a New \$7,000 Tax Credit for Purchasing Advanced Vehicles.
- Establish a National Low Carbon Fuel Standard



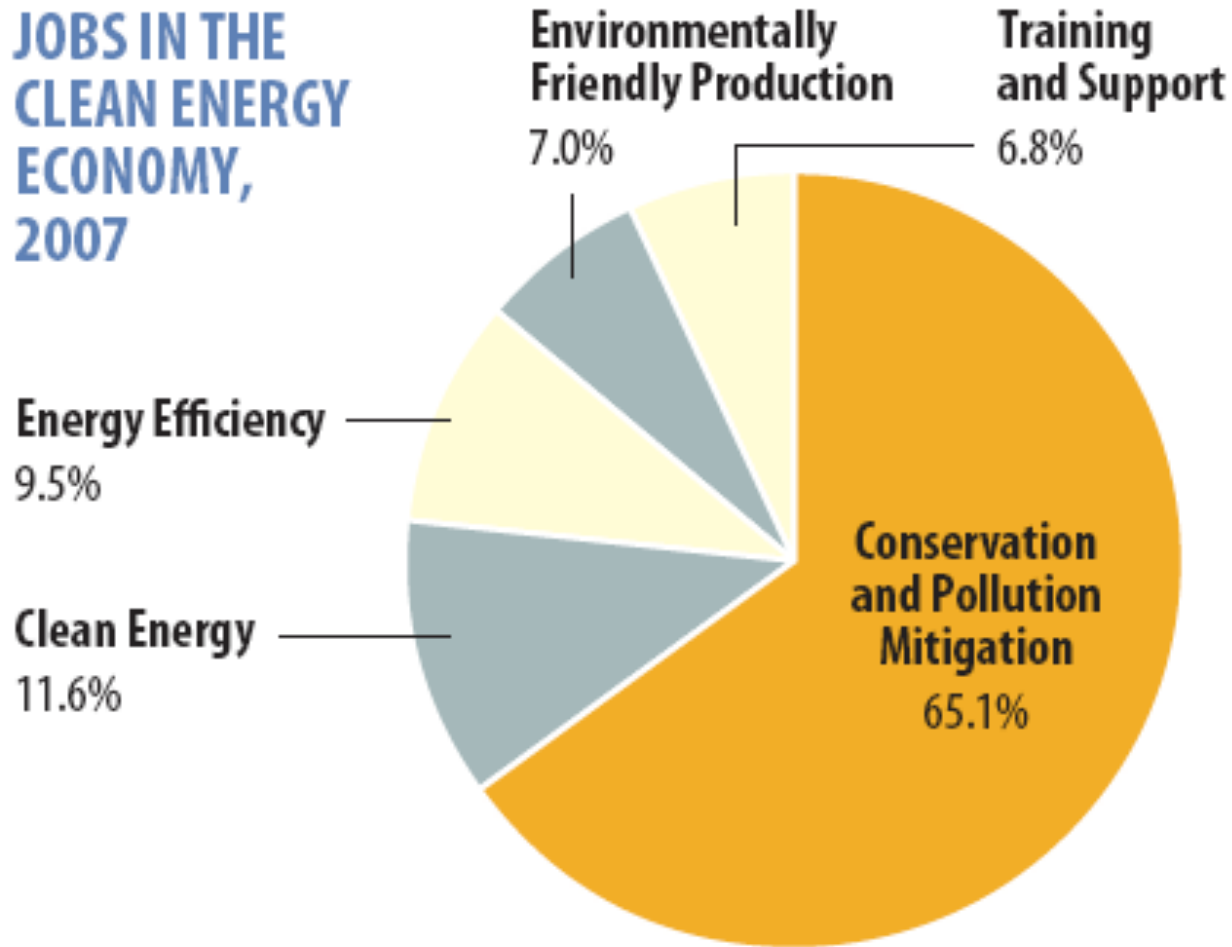
Foundation of US green economy

- Innovative, entrepreneurial business culture
- Deep, flexible capital markets (usually)
- Extensive knowledge system
 - Universities
 - National Laboratories



US Clean Energy Jobs

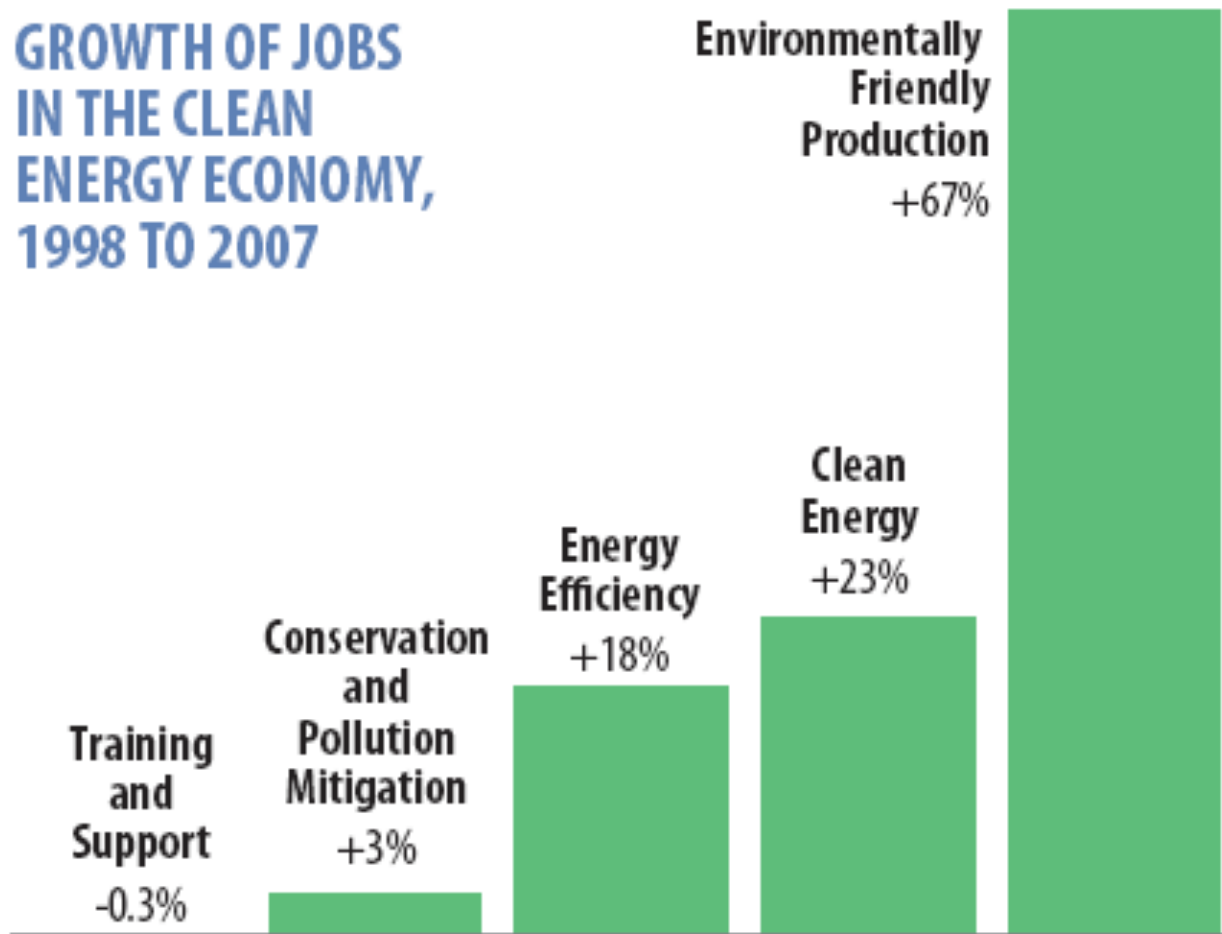
JOBS IN THE CLEAN ENERGY ECONOMY, 2007



Source: *The Clean Energy Economy 2009*, Pew Charitable Trusts

US Clean Energy Job Growth

**GROWTH OF JOBS
IN THE CLEAN
ENERGY ECONOMY,
1998 TO 2007**



Source: *The Clean Energy Economy* 2009, Pew Charitable Trusts

Policy approaches

- Targeted Federal spending on infrastructure and procurement
- Increase in Research and Development
- Aggressive approach to bringing new technologies to market
- Subsidy and tax policy
- Regulations



Policy Approach

1. Federal spending

- Stimulus spending
 - \$5 billion for weatherization of houses
 - \$20 billion in continued tax credits for renewable energy
 - \$15 billion for building mass transit projects
 - \$500 million to train workers to conduct efficiency improvements
 - \$5 billion for energy research and technological R&D
- \$59 billion in economic stimulus funds and \$150 billion from the federal budget for “America’s clean-energy future”



Policy Approach

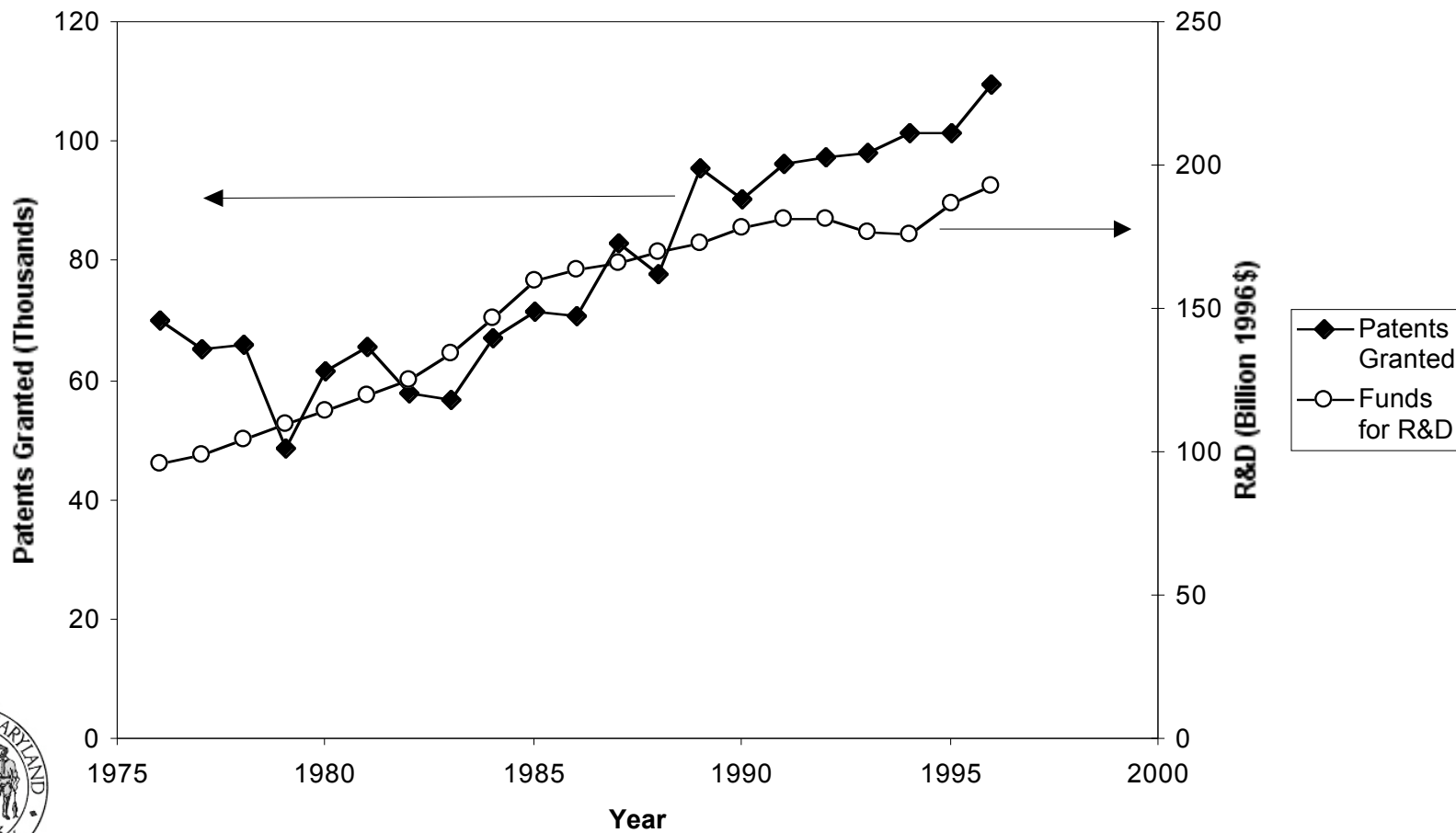
2. Increase in R&D

- Obama target of 3% of GDP to overall research and development
 - All areas of research
 - both public and private
 - Implies increase of \$46 billion
- President's budget
 - \$150 billion over 10 years for a new clean energy R&D and technology fund



Federal R&D Policy Can be Effective

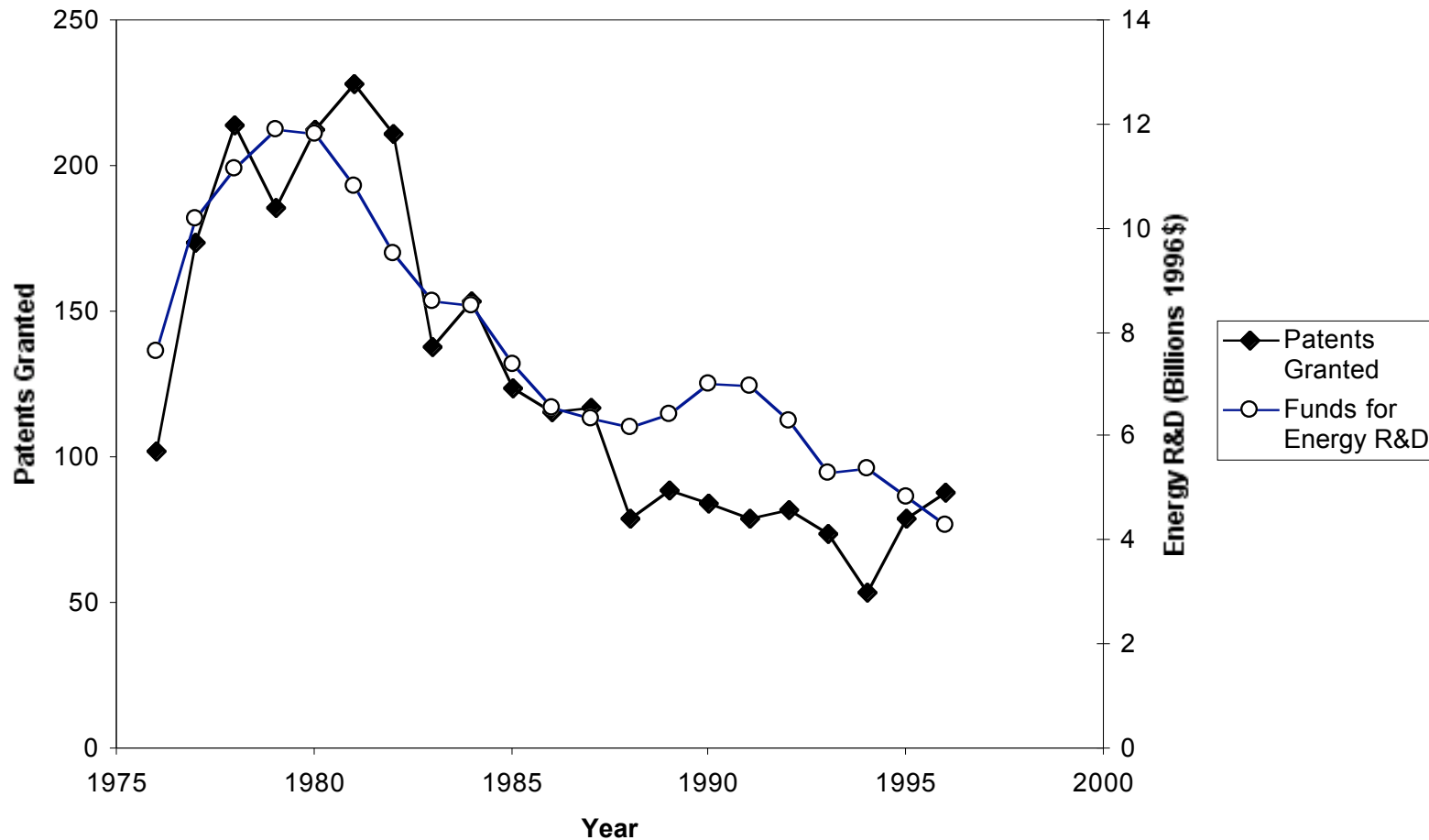
Figure 1. Total U.S. patents granted and total U.S. investments in R&D.



Source: R. Margolis and D. Kammen (1999) *Science*, 285: 690 – 692.

US Energy innovation had languished for decades

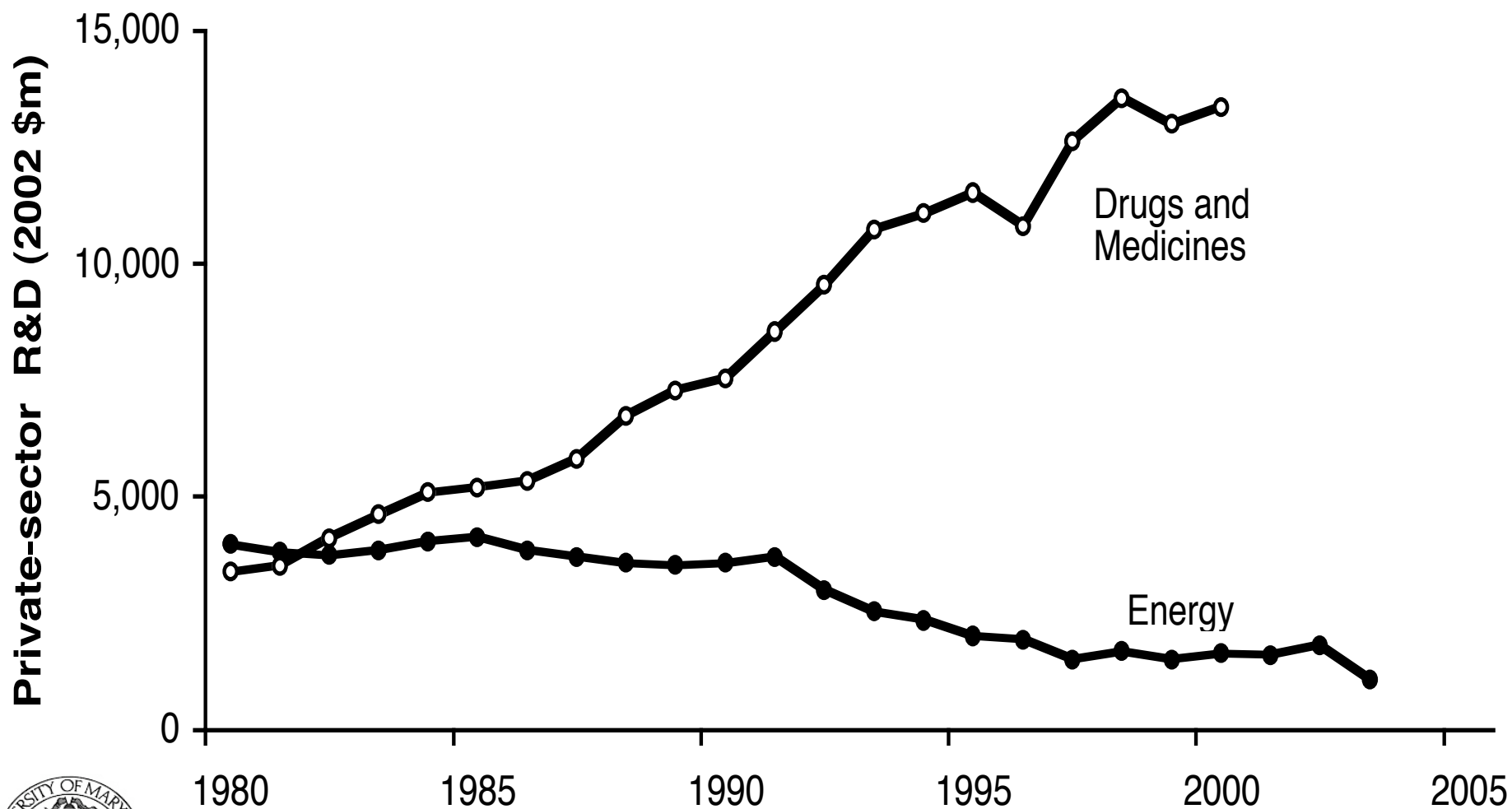
Figure 2. U.S. energy technology patents and total U.S. energy R&D.



Source: R. Margolis and D. Kammen (1999) *Science*, 285: 690 – 692.

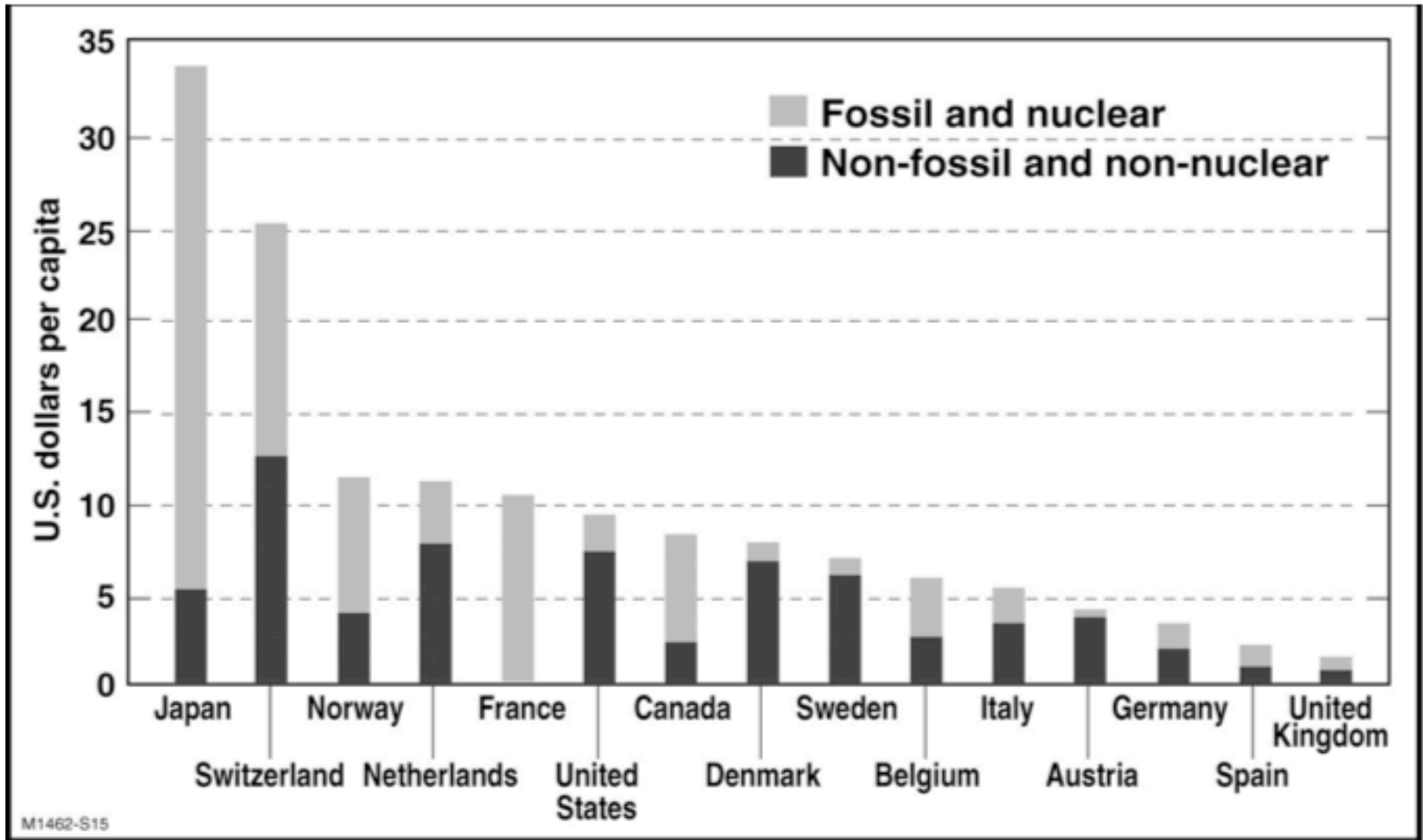


US Energy private energy R&D also lagged other sectors



Source: Kammen and Nemet, 2005

Per-capita energy R&D spending across countries

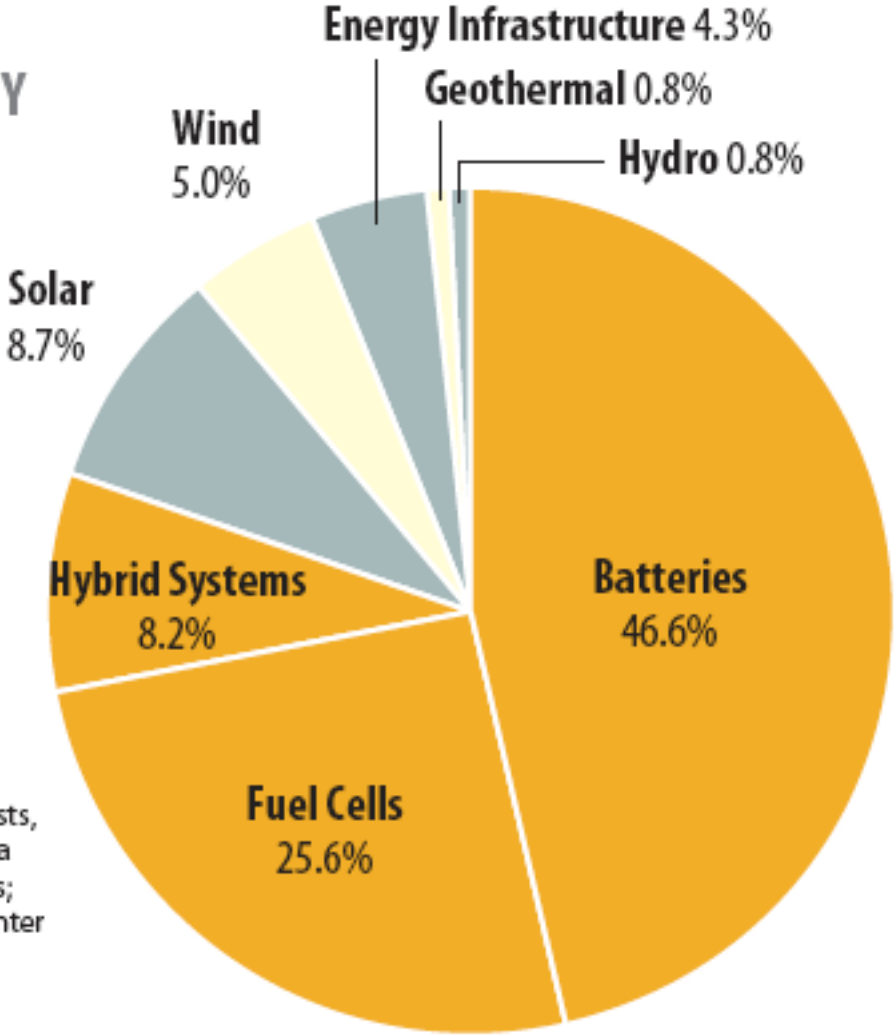


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World Energy Assessment, 2000

US energy innovation across technologies

**CLEAN
TECHNOLOGY
PATENTS,
1999
to 2008**



SOURCE:
Pew Charitable Trusts,
2009, based on data
from 1790 Analytics;
analysis by Pew Center
on the States and
Collaborative
Economics.



Policy Approach

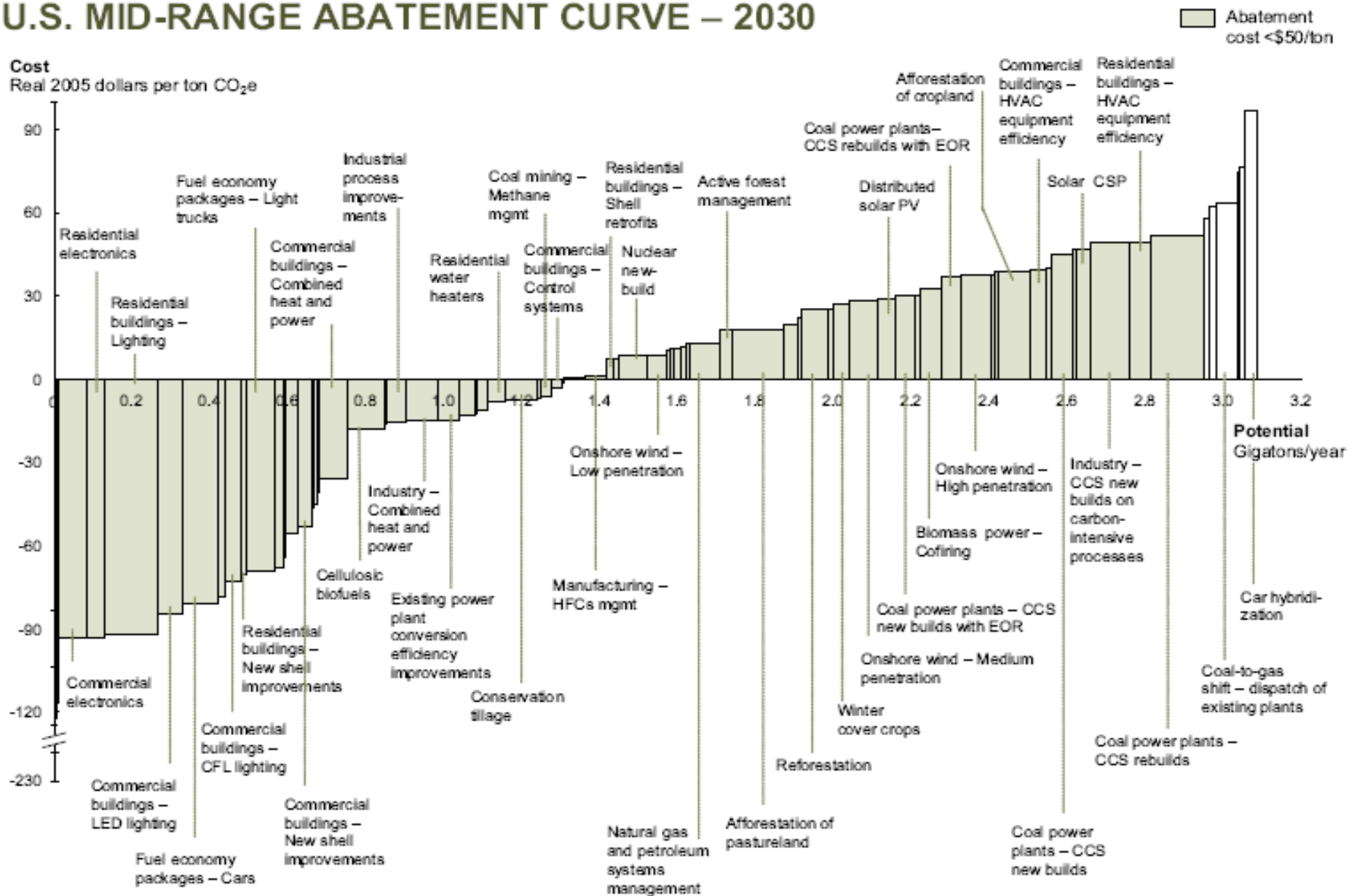
3. Bring new technologies to market

- New research facility: ARPA-E
 - Advanced Research Projects Agency – Energy
 - Funded for \$400 million in Stimulus package
 - Eventual funding up to \$1b per year
 - Structure
 - Modeled on DARPA (Defense-ARPA; Internet)
 - Finance outside researchers for projects that last three to five years.
 - Project managers are autonomous, and face few bureaucratic impediments
 - forge partnerships among government, businesses and academic researchers
 - concentrate on long- and medium-term research.
 - Designed to bridge the “valley of death” between laboratory and market



US CO₂ Abatement Opportunities, 2030

U.S. MID-RANGE ABATEMENT CURVE – 2030

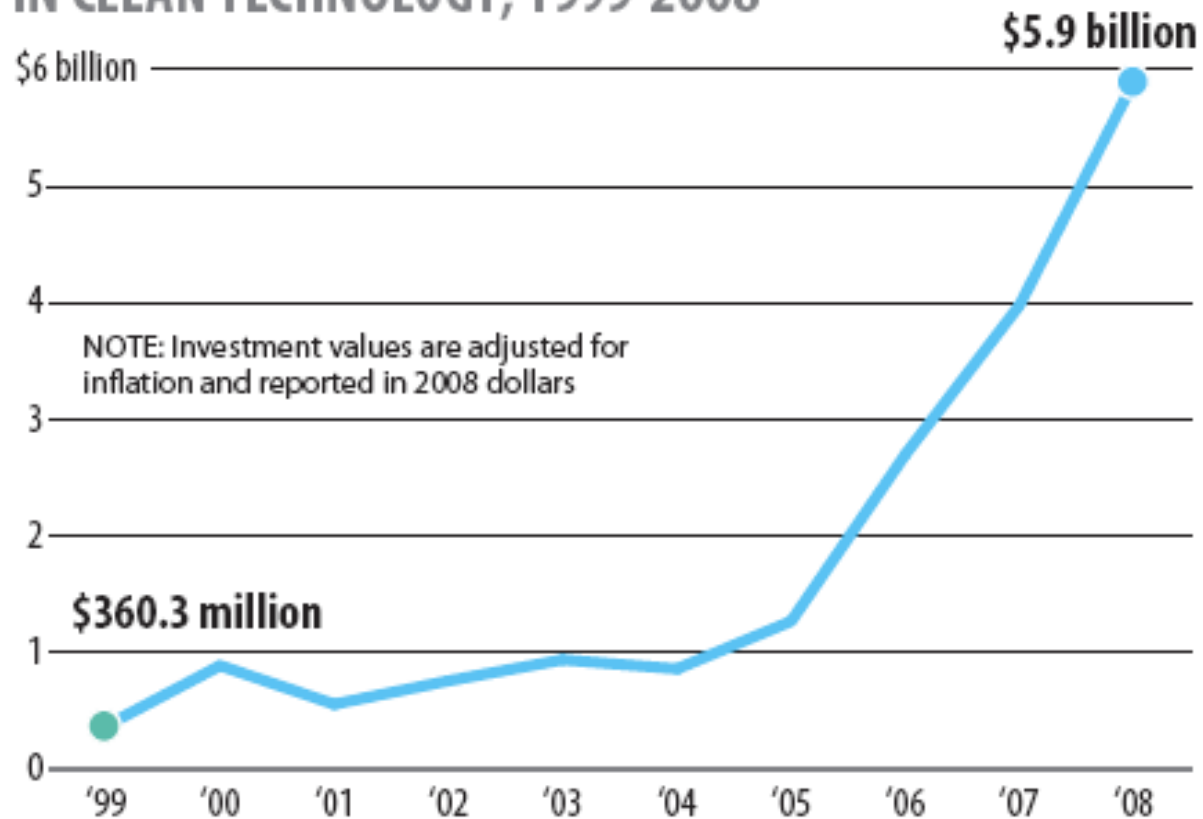


Source: McKinsey analysis

Source: McKinsey 2009

New Venture Capital Investment

VENTURE CAPITAL INVESTMENTS IN CLEAN TECHNOLOGY, 1999-2008



SOURCE: Pew Charitable Trusts, 2009, based on data from The Cleantech Group™ LLC; analysis by Pew Center on the States and Collaborative Economics.



Policy Approach

4. Financial Incentives

- Extension of production tax credit for renewables
- Possible vehicle scrappage program
- Personal tax incentives for energy efficiency improvements (20% of cost up to \$1500)
- Proposed cap-and-trade would set price on carbon



Policy Approach

5. Regulations

- Automobile fuel economy standards of 35.5 mpg in 2016
 - Possible reduction in power of automakers to oppose regulation
- EPA has right to regulate CO2
- Increase in appliance efficiency standards
- Possible federal RPS
- Climate legislation



But, not completely coordinated

- Countervailing currents in policy
 - Subsidies for automakers
 - “Cash for clunkers” bill
 - Roadbuilding
- Economic crisis
 - Reduces available capital for new projects
 - Reduces appetite for risk in private sector
 - Heavy government borrowing limits future spending



Summary

- US leadership is prioritizing green development
- Emphasis on supporting innovation and new technologies
- Important components remain to be implemented
 - Carbon pricing policy
 - Federal Renewables Portfolio Standard

